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DETROIT

Automotive Daily News

★CARS★ SHOP EQUIPMENT TRUCKS ★★AVIATION★★ PARTS ACCESSORIES ★TIRES★

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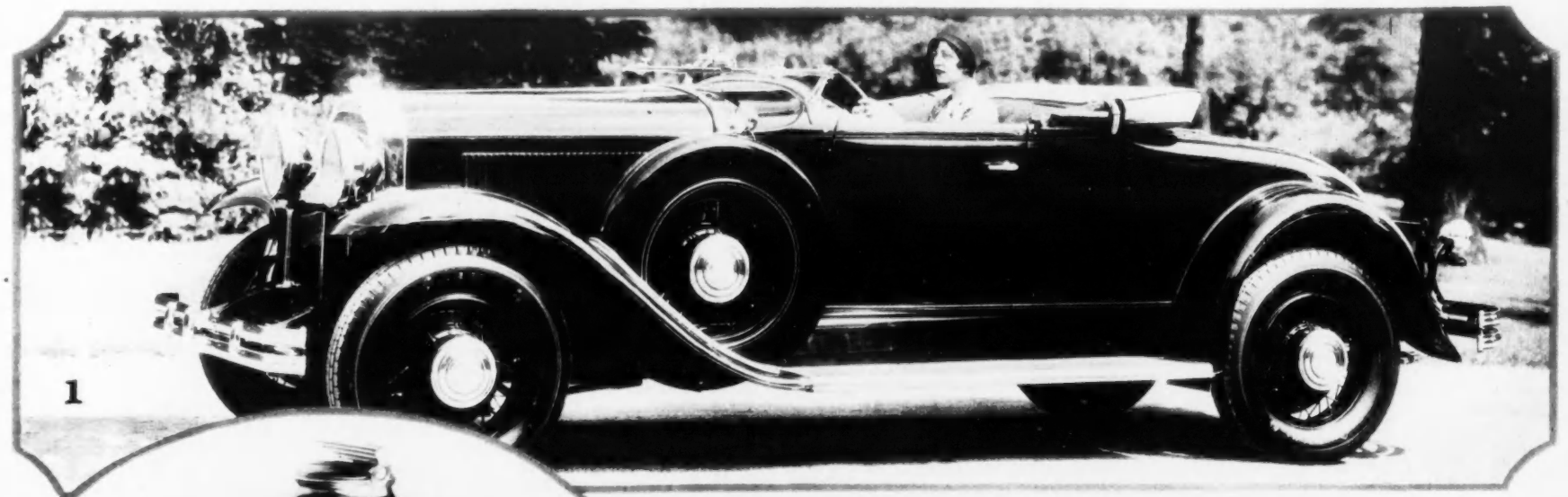
BUICK PRESENTS
FOUR NEW SERIES OF VALVE-IN-HEAD STRAIGHT EIGHTS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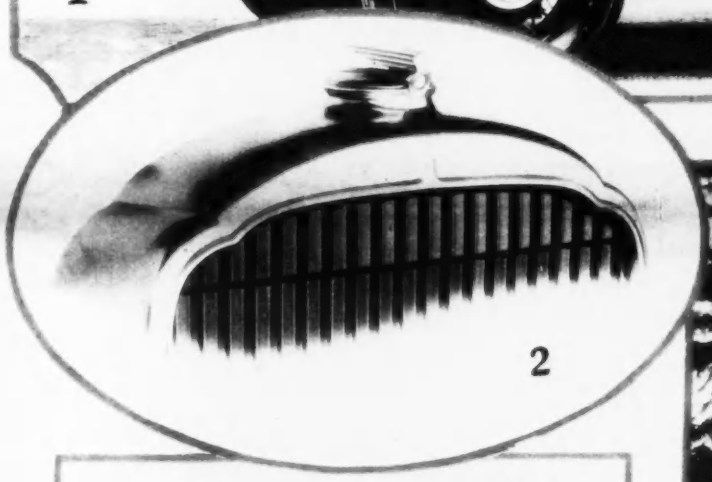
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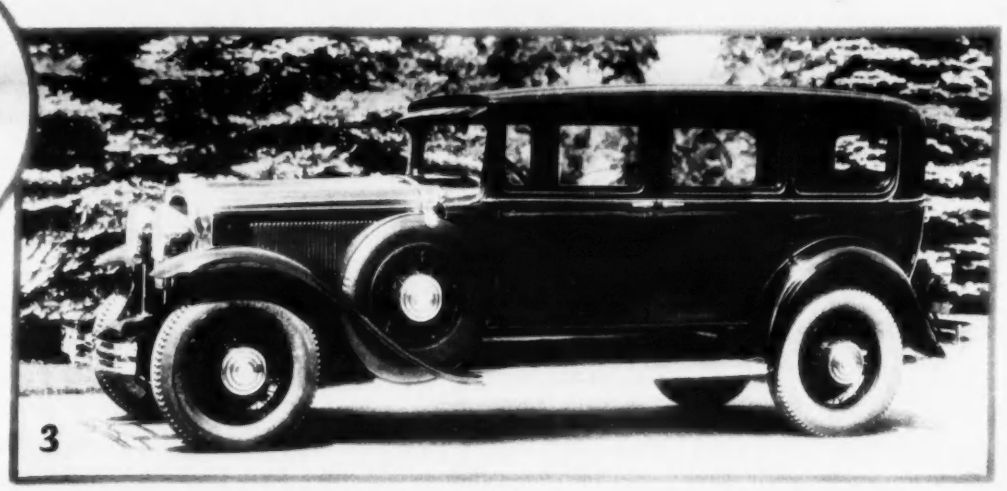
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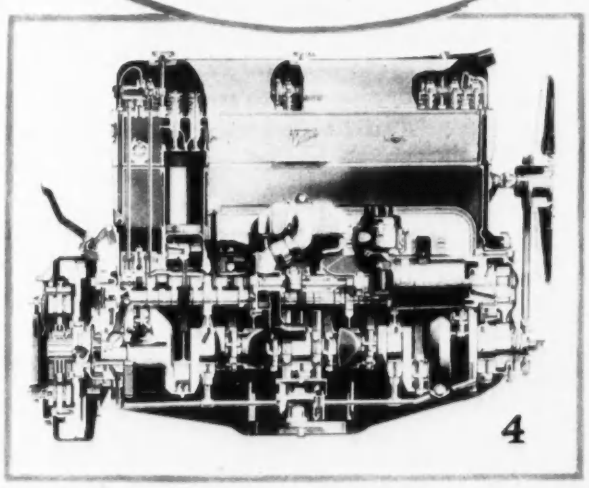
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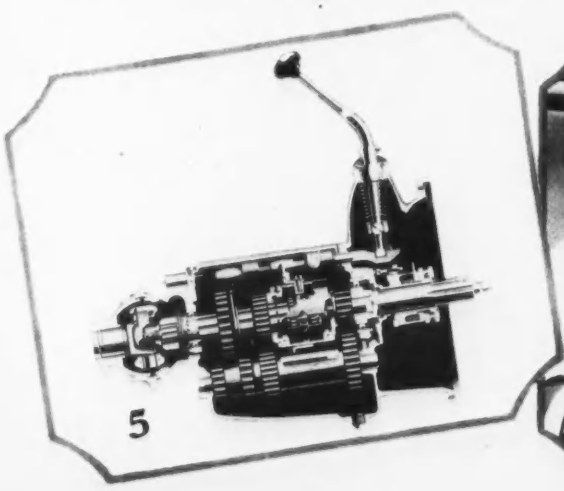
The new 1931 Buick Eight is offered in four series embracing twenty models within a price bracket of $1,025 to $2,035. Straight Eight Valve-in-Head engines, new Buick syncro-mesh transmissions, new bodies insulated against cold, heat and noise, new oil temperature regulator, new air-intake silencer and cleaner, road shock eliminators, double-acting shock absorbers and controlled internal servo-brakes are a few of the many distinguishing features.

1. *The Four Passenger Sport Roadster.*
2. *The New Radiator Cap Emblem.*
3. *The Seven Passenger Sedan.*
4. *Cut-Away View of Engine.*
5. *New Buick Syncro-Mesh Transmission.*
6. *Cut-Away View of the Oil Temperature Regulator.*
7. *The New Instrument Panel.*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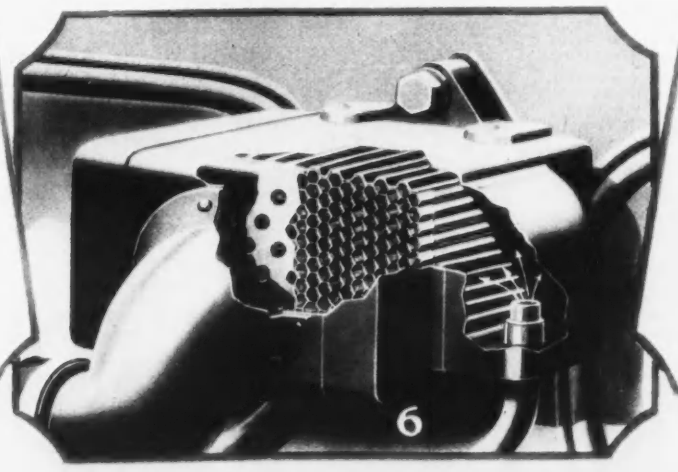
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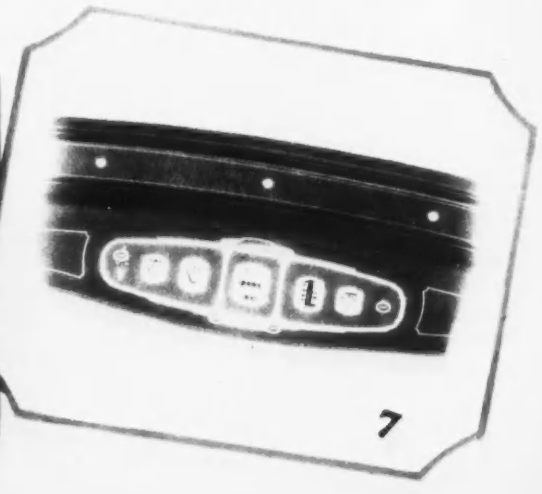
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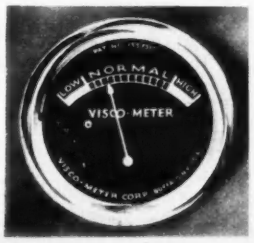
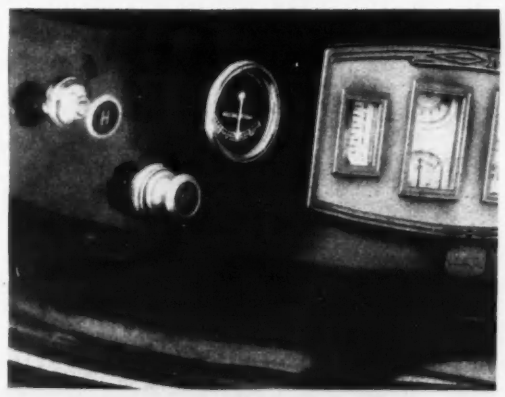
"... and this device will *keep* your new Buick *new*"

Into this "greatest of Buicks" is built a precision and dependability gained thru years of ceaseless endeavor in automotive design and construction... From it emerges new brilliancy of performance! VISCO-METER pledges to protect and prolong this performance.

Like the Buick "8", Visco-Meter is new to motordom; yet upon the function of this important device depends the life of any motor. Rightly called "the watchdog of lubrication", Visco-Meter analyzes motor oil under actual operating conditions and reveals its exact lubricating value (viscosity) for every minute of every mile.

Guesswork ends! The driver has merely to glance at the dial on the instrument board to know at once the lubricating quality of oil being supplied to bearings and cylinder walls. All danger of inferior, incorrect or "worn out" oil is eliminated... The motor is constantly guarded.





Visco-Meter installed on Instrument Board

A Scientific Basis For Oil Changing

Visco-Meter replaces the wasteful hit-or-miss method of changing oil. Instead of remembering mileage reading, the driver needs only to glance at the Visco-Meter dial occasionally. When "LOW" viscosity is indicated, he knows with certainty that his oil is either too light or "worn" to the point of uselessness, and needs renewing. Too heavy lubricant is also revealed.

Visco-Meter makes it possible to select the best (and most economical) grade of oil for each particular motor. It also reports instantaneously all lubrication disorders: clogged lines, leaks, faulty oil pumps, dangerously low pressures, insufficient oil.

Profitable, Too

Besides insuring the performance of their cars and keeping customers "sold", an increasing number of Buick dealers are finding Visco-Meter a real profit maker. It makes a "hit" at once with the driver. Installation is simple; no servicing is required. Send coupon for full details. Visco-Meter Corporation, 310 Grote Street, Buffalo, N. Y.

VISCO-METER CORP.
310 Grote Street, Buffalo, N. Y.
Gentlemen: Please send me complete information on the Visco-Meter.
Name .....
Address .....

The VISCOMETER
Takes the Guesswork out of Motor Lubrication

A National Newspaper for Every Branch of the Industry

Automotive Daily News

CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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FULL TECHNICAL DETAILS OF BUICK '8s'

Registrations of Trucks Decline Sharply in June; Half-Year Drop About 13%

Returns From Twenty-three States and District of Columbia Indicate Total for Month of 32,000, 29 Per Cent. Below Year Ago

NEW YORK, July 25.—Registrations of new commercial cars in June in the first twenty-three states to report retail sales for that month and the District of Columbia amounted to 11,860, as compared with 17,112 for the same states in the corresponding month of last year, a decline of 30 per cent.

This is the most severe decline in new truck sales experienced in any month so far in 1930 and may be expected after the unusually high rate of sales of commercial cars in the earlier months of the year.

On the basis of this showing in the first states to report it is estimated that total registrations for the entire country in June amounted to approximately 32,000, as compared with 45,061 in the corresponding month of last year, off 29 per cent.

If this estimate proves accurate, the registrations for the first six months of the year will total approximately 226,509, as compared with 262,944 in the corresponding period of last year, a decline of 13 per cent.

Each of the states reporting so far for June showed a decline in sales from last year, the falling off being fairly uniform in degree.

It is now apparent that the falling off in retail sales in June was greater than was apparent, during the month, and it is probable that that month marked the bottom of the market for the year, after allowance is made for the seasonal falling off for the remaining months of the year.

Following are the registrations in the twenty-three states and the District of Columbia for June, as

(Continued on page 5)

WILLYS-KNIGHT GREAT SIX SALES FOR MONTH OF JULY DOUBLE MAY

Toledo, O., July 25.—Sales of Willys-Knight Great Sixes during the past sixty days indicate, according to George M. Graham, vice-president in charge of sales, Willys-Overland, Inc., that the resumption of buying on the part of the public is on a vigorous basis and returning rapidly to a normal status.

Shipment of Willys-Knight Great Sixes, the highest priced car built by the Toledo manufacturer, have, during the first half of the current month, almost equalled the total factory deliveries to its distributors and dealers for the month of May. Shipments since the 15th and orders on hand for the balance of this month will see the May output doubled. June shipments, which showed a gain of approximately 25 per cent. over May, will, in turn, be increased well over 50 per cent. during the present month.

Cleveland Pneumatic Official Predicts Normalcy by 1931

Cleveland, July 25.—The pendulum has virtually reached the bottom of its stroke in the 1930 period of business and industrial let-up and there are certain indications that it is now on the upward trend, according to John DeMooy, assistant treasurer of the Cleveland Pneumatic Tool Company.

This company contributes to the automobile industry, not only through Cleco Gruss air springs for buses and trucks and multi-power booster brakes, but riveters, hammers and a variety of other pneumatic devices. Its business is a true barometer of activity in the automotive field.

"Whether the automobile business is a controlling factor in industry is oftentimes disputed," Mr. DeMooy said, "but it is a most important one, nevertheless, and it keeps in step and goes hand in hand with general business.

"We recently learned that one of the large Detroit plants, which specializes in auto body die blocks, has received substantal orders and our own plant recently received a worthwhile contract from one of the largest body plants in the country. These indicate that at least some

(Continued on page 17)

Price Range From $1,035 to $2,035; 4 Chassis; Slight Body Changes

DETROIT, July 25.—Four chassis with eight-cylinder, valve-in-head, vertical engines comprise the 1931 Buick line. The general appearance of the bodies is the same as previously, though many refinements have been made and slight modifications in radiator and body lines are apparent.

In a price range from $1,035 to $2,035 these Buicks replace sixes previously made by this division of General Motors. The four Buicks are indicated as follows: Series 8-50 (114-inch wheelbase), series 8-60 (118-inch wheelbase), series 8-80 (124-inch wheelbase), and series 8-90 (132-inch wheelbase).

New Buick Prices

Buick 50, 114-Inch Wheel Base	
8-50 5-pass. 2-door sedan	$1,035
8-54 4-pass. sport roadster	1,055
8-55 5-pass. phaeton	1,055
8-56 2-pass. business coupe	1,025
8-56S 2-pass. sport coupe	1,055
8-57 5-pass. 4-door sedan	1,095
Buick 60, 118-Inch Wheel Base	
8-64 4-pass. sport roadster	$1,335
8-65 5-pass. phaeton	1,335
8-66 2-pass. business coupe	1,285
8-66S 2-pass. sport coupe	1,325
8-67 5-pass. 4-door sedan	1,355
Buick 80, 124-Inch Wheel Base	
8-86 4-pass. coupe	$1,535
8-87 5-pass. 4-door sedan	1,565
Buick 90, 132-Inch Wheel Base	
8-90 7-pass. 4-door sedan	$1,935
8-90L 7-pass. limousine sedan	2,035
8-91 5-pass. brougham	1,785
8-94 4-pass. sport roadster	1,610
8-95 7-pass. touring	1,620
8-96 5-pass. coupe	1,765
8-96S 2-pass. sport coupe	1,720

In developing the new car, Buick has retained most of the fundamentals for which it has been noted in the past, such as the valve-in-head engine, unit power plant, torque tube drive, controlled servo-internal brakes, sealed chassis and double-acting shock absorbers. To these have been added several major advancements and improvements.

The 1931 advances include syncro-mesh transmission, an engine oil temperature regulator, dual carburetion, combined intake silencer and air cleaner, new crankcase ventilating system, improved steering gears, one-piece rear axle housing, new clutches, four-point rubber insulated engine mountings and numerous other improvements.

The six models in 8-50 series are carried on a 114-inch wheelbase and powered with an eight-in-line valve-in-head motor which has a bore and stroke of 2⅞x4¼ inches, giving a total piston displacement of 220.7 cubic inches. This motor is rated at 76½ horse power and gives the car, with an axle ratio of 4.54 to 1, a speed of seventy-five miles per hour.

Five models are offered in the 8-60 series on a 18-inch wheelbase. The motor used in this series has a bore and stroke of 3 1-16 inches by 4⅝ inches, a total piston displacement of 272.6 cubic inches, developing 90 horse power and a speed of eighty miles per hour. Two different axle ratios are used in the 60 series—on models 8-66, 8-66S and 8-67 the ratio is 4.45 to 1, and on models 8-64 and 8-65 it is 4.18 to 1.

In the 8-80 and 8-90 series the motor has a bore and stroke of 3 5-16 inches by 5 inches, with a total piston displacement of 344.8 cubic inches, giving the cars in these two series a rating of 104 horse power and a speed of eighty miles per hour. All models in the 8-80 series have an axle ratio of 4.27 to 1. Models 8-90, 8-90-L and 8-91 are geared at 4.36; models 8-94 and 8-95 at 4.18 and models 8-96 and 8-96-S at 4.27.

With the adoption of syncro-mesh transmission, the gears can be shifted noiselessly at low speeds in traffic and at high road speeds. This type of transmission also has the feature of permitting shifting into second gear from high.

The engine oil temperature regulator is another of the new engineering features found in the new 1931 Buick eight. This device controls the temperature of the oil under all conditions and is claimed to permit of sustained high speeds without the excessive engine wear which ordinarily occurs in motors not equipped to control the oil temperature.

The construction principle of the engine oil temperature regulator is the same as that used in the radiator. All the oil going to the bearings is passed through a water-jacketed core, the temperature of which is controlled by the regular cooling system. This feature also is claimed to benefit the engine in cold weather operation, as the water in the cooling system is said to warm very quickly to a normal operating temperature and rapidly raises the temperature of the oil so that it will flow freely, insuring an ample supply of oil to all working parts in a very short time.

The new Buick Eight is equipped with a refined oiling system; all bearings and working parts are lubricated by pressure directly from the oil pump and oil filter. The oil pump is located in the center of the engine, deep in the oil pump, and has capacity to supply all main bearings, connecting rods, camshaft bearings, pistons cylinder walls, the overhead valve mechanism and the timing gears. The system is designed to carry a normal pressure of thirty-five pounds and is provided with blow-off and by-pass valves to prevent abnormal pressures.

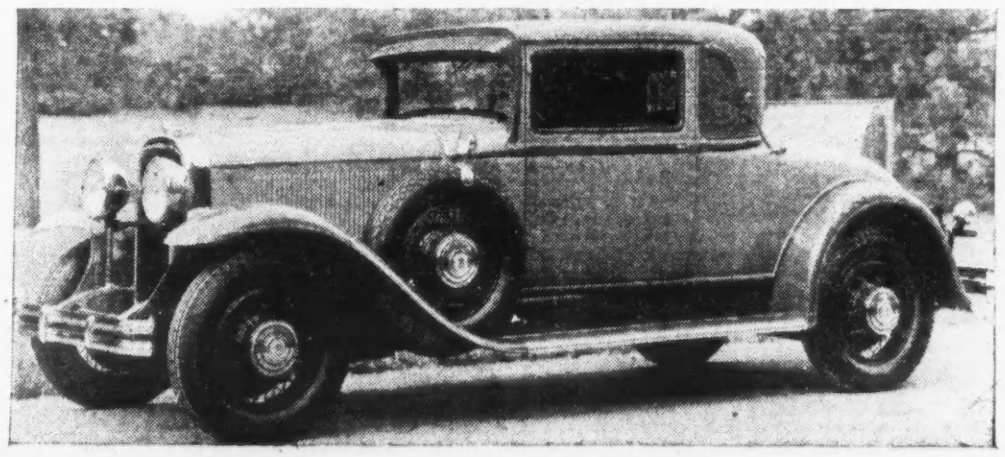
The Buick-Marvel carburetor and heat control which has been used on all former models, is installed on

(Continued on page 4)

MALLEABLE CASTINGS OUTPUT OFF IN JUNE

Washington, July 25.—Production of malleable castings in June as reported by the Department of Commerce amounted to 39,269 net tons, against 62,035 tons in May and 72,232 tons in June, 1929. For the first six months of 1930, output was 353,989 tons, against 467,782 tons in the first half of last year. Shipments for June were 43,739 tons, against 60,848 tons and 72,346 tons, respectively. For the six-month periods shipments were 348,327 tons and 463,228 tons, respectively.

Buick Model 8-96, Four-Passenger Special Coupe



Many Mechanical Refinements in New Buick Eights

(Continued from Page 3)

all the new engines. On the larger motors, used in the Series 8-60, 8-80 and 8-80 models, dual carburetors and manifolds are used. With dual carburetor developed for the new engines, each carburetor feeds four cylinders. On the smaller engine of the 8-50 series dual carburetion is not used.

The intake noise which Buick engineers say is caused by the valve timing necessary to maximum efficiency and power is overcome on the Buick Eight by a newly developed combination silencer and air cleaner. This silencer muffles the intake noises throughout the speed range.

The cooling system, with thermostatically controlled shutters, is identical on all new models. The thermostat controlling the shutters is entirely new and is placed directly in the water in the top tank of the radiator. The shutter design has also been changed to prevent binding and rattles. All the new eight-in-line models show a distinctive new emblem carrying a figure "8" neatly molded in the radiator filling cap.

Another claim for the Buick Eight is the achievement of silent operation of the overhead valve mechanism. The new cars can be driven at any speed, or under any temperature conditions without valve noises, the makers state. The entire valve mechanism has the same easy accessibility which has typified previous Buick engines, and valve adjustments can be made by simply removing the rocker arm cover. The entire valve mechanism can be inspected or removed by removing the side covers.

There is a new crankcase ventilating system; the new crankshaft with its counter-weights and balancer acting as a blower, forcing an fumes and condensation, while in suspension, to the valve lifter compartment at the side of the engine. This compartment is vented with a long-tail pipe which extends below the engine side pan and carries all fumes and condensation clear of the car.

With the new ventilating system and oil filter, Buick engineers state it is not necessary to change the oil in the crankcase more than four times a year. Oil should be added to the crankcase as required.

Maximum rigidity with minimum weight is obtained in the new engines by casting the upper crankcase and cylinder block as a unit. The center line of the crankcase extends several inches below the center of crankshaft, and the sides of the case have large, well-proportioned ribs.

The crankshafts for the new eight-in-line Buick engines represent advanced engineering practice. All shafts have five large main bearings which are stepped up in size, front to rear, making an extremely rigid and well-proportioned crankshaft. They are fully counterweighted and a new type torsional balancer is used. This balancer is a unit with the crankshaft, it is enclosed in the crankcase running in oil and fully protected against dirt and abrasives.

The ring type torsional balancer is a new development, claimed to be superior to the saddle type formerly used. With the ring type, Buick engineers state, a much more accurate balance of the camshaft can be obtained, as the balancer can be balanced without being assembled to the crankshaft. This is important also from the service standpoint, as a new balancer can be installed without disturbing the balance of the crankshaft assembly.

Following past practice, cast iron pistons are used in the new engine. The connecting rods are forgings with large bearing surfaces, and the connecting rod and piston assemblies are held within close limits for weight.

The eight-in-line engines are mounted at four rubber-insulated points. The rear mountings are a special development with vulcanized insulation, making a very rigid construction, with enough flexibility to dampen out all engine noises. The front mounting is a sturdy steel stamping which also forms the timing gear cover. This mounting is bolted to the front cross member with a rubber insulation.

The synchro-mesh type of transmission permits gear shifting and acceleration in traffic; the gears can be shifted quickly and quietly from first to second, second to high, and from high back to second. The second-speed gears are also quiet and smooth, and the new Buick can be accelerated up to forty and forty-five miles per hour in second gear and then shifted smoothly into high. The syncro-mesh transmission is built in two sizes, one for the cars in Series 8-80 and 8-90 and the other for the 8-60 series.

The Buick synchro-mesh transmission is the selective type with three speeds forward and one reverse. The first reverse speeds are conventional sliding gears. The second speed gears are in constant mesh. The shifting of second and direct speeds is controlled by a synchronizing mechanism which consists of a sliding gear clutch and engaging friction cones. When making the shift the cones are engaged, bringing the speed of the gears and clutch in step. This permits the shift to be made without a clash.

Control assembly has been moved forward on the transmission case, which permits ample leg room and gives a wide freedom of movement in the front compartment of the new car.

The Series 8-50 models are equipped with the conventional three speeds forward and reverse transmission. In this size of car, the rotating parts, such as clutch and transmission gears are small, and the gears can be shifted rapidly without excessive clash.

New clutches have been developed which give longer life, smooth positive engagement, eliminate garb and chatter and, with the rotating parts reduced in weight, contribute ma-

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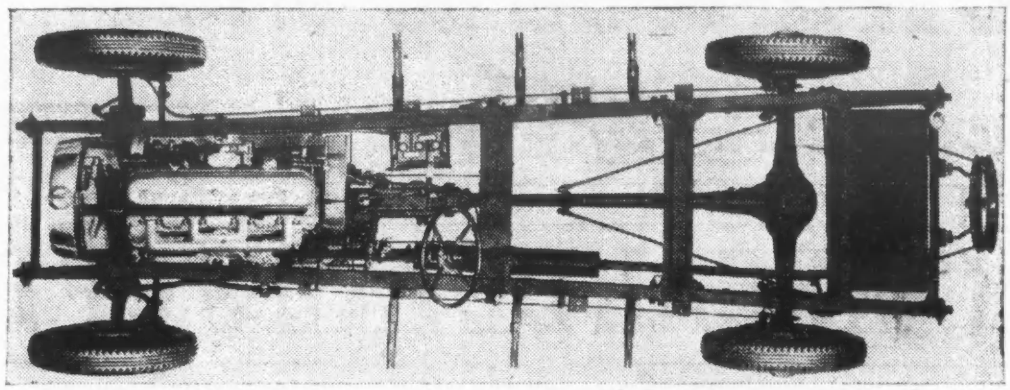
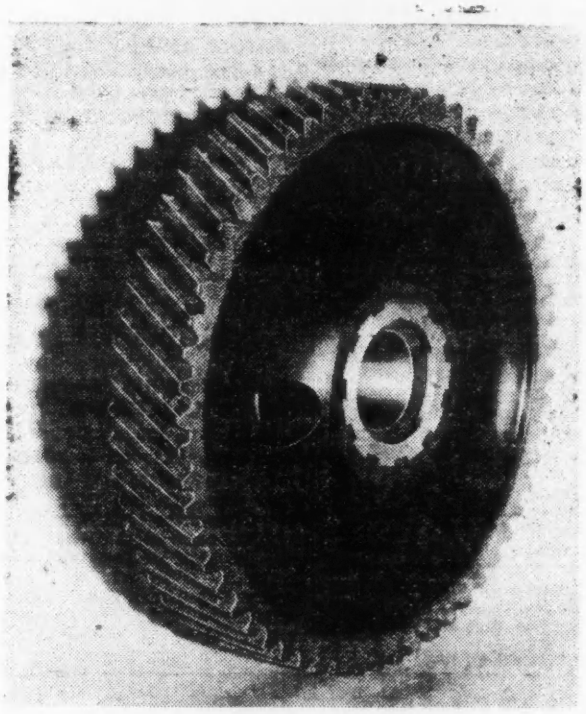
Plan View of Buick Eight Chassis



TEXTOLITE TIMING GEARS

A REMARKABLE NEW DESIGN MATCHED TO THE MARVELOUS ENGINES OF THE SEASON'S NEW MODELS

FOR the luxurious new eights that are now being introduced—for the highly advanced sixes and fours, too—it has become necessary to develop a timing gear of a quietness hitherto unavailable.



General Electric engineers have devised a timing gear of a new material and a new construction. The rim is unchanged, retaining its proved strength and negligible wear, but it is combined with a web of a new, unique material which gives a degree of quietness distinctly above anything previously produced.

Already a sincere tribute has been paid this new design in its adoption for the new models of a manufacturer with a record of 1,200,000 cars now on the road—all of which are equipped with Textolite timing gears.

830-95

GENERAL ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

New Buicks Offered on 114 to 132-In. Wheelbase

(Continued from Page 4)

terially to the ease and quietness of gear shifting. The clutches are the two plate and single plate types; Series 8-80 and 8-90 using the two-plate type and Series 8-50 and 8-60 using the single plate type.

The frames are entirely new. A heavy box type cross member is placed at the center, and all other cross members have been increased in size and strength. The engine is mounted at four points in such a way as to assist in chassis rigidity.

New type double-acting shock absorbers are used, and they are built into the frame at the cross members in such a way as to reduce to a minimum strains and deflections. The long semi-elliptic springs have been further improved, and the combination of springs, double-acting shock absorbers and rigid chassis gives all cars improved qualities.

The brake hook-up has been simplified to eliminate many parts that formerly required attention and adjustment; this change adds to the clean appearance of the chassis. Brackets supporting the steering gear, spring shackles and body extend the full depth of the side member and give exceptionally rigid support.

The chassis used on models in the 8-50 series gives the same results as is obtained on the larger models, but on this smaller series a Hotchkiss drive and single shock absorbers are used.

A new method of assembling the radiator shutters to prevent binding and distortion has been used in the construction of the new Buick Eight. The core is mounted in the shell and the radiator assembly is mounted on the chassis. This removes all road strains from the radiator core and provides a rigid mounting of the radiator assembly to the frame.

The shutter frame is a rigid one-piece stamping, mounted in the radiator shell, and is entirely separate from the radiator core assembly. The thermostat for operating the shutters is of a new design and is mounted in the top tank of the radiator directly in the water. The temperature of the water is transferred immediately to the thermostat, so that movement of the shutters can be controlled within a very narrow range of the water temperature. This allows the shutter opening to be set at a higher temperature, which results in better engine efficiency.

The new brake and brake hook-up is one of the outstanding improvements on the new chassis. The four-wheel controlled internal servo-brakes, which have proved so successful on the 1930 models, have been improved and simplified so that much better braking is obtained. When adjustments are necessary they can be made through a single adjustment nut accessibly located on the outside.

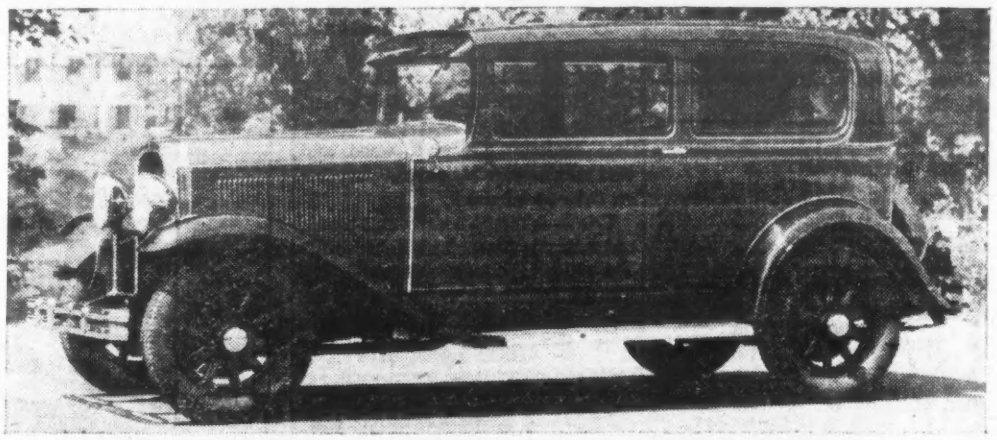
Brake cross shafts on the axles, a set of brake rods and one cross shaft mounted on the frame are entirely eliminated, giving the chassis a much cleaner appearance. On the front brakes a cable control is used. This cable control makes a very neat installation and is enclosed in a dirt proof housing. The cable control eliminates the brake cross-shaft with the two universal joints formerly used and is a much safer and more durable construction.

The important improvements in the steering assembly include better materials, improved hardening and heat treatment, increased bearing surfaces and hardened steel bushings, steel retainers for thrust bearings, hardened bushings on roller shafts, better brass bearings in roller shaft housing and new oil seals to prevent leakage.

In the 8-50 series the cars are equipped with a worm and sector type gear, sufficiently large to give easy steering. All other models in the other three series use a worm and roller type gear.

Many changes and improvements in design are made in springs, shock absorbers, shock absorber location and materials to give better riding qualities. The front springs are increased in length one-half inch and materials changed to an alloy steel. On the rear springs, the front end was raised two inches and the angle

Buick Model 50, Two-Door Sedan, $1,035



and length of shackles were increased to give a better position for absorbing road shocks. The springs have a softer action, controlled by the new shock absorbers, which are the opposed type adjusted to give a softer control. The shock absorber connecting links are equipped with oilless bushings mounted in rubber.

When the transmission is filled with oil the entire tranmission and universal joint are lubricated and require only periodic attention; the same ease of lubrication is found on the rear axle and the steering gear. The remaining parts, consisting of spring shackles, brake shafts, steering connections and front axles, have oil lines running to a centralized position and can be reached through a door in the side apron.

The rear axles have been improved by the use of a one-piece pressed steel housing, making it oil tight and exceptionally strong and sturdy. Due to the higher road speeds possible in these new cars, the front axle I-beams have been increased in strength and have an ample factor for safety and the ability to resist road shocks and take up brake strains.

One of the most important improvements in the new 1931 line is the improved design and construction of the Fisher bodies. The bodies and chassis have been developed as units to produce the maximum in strength, rigidity and the elimination of squeaks, rattles and breakage.

Contributing factors in this increased body strength include a revision of the roof construction and the use of metal brackets in place of glued joints; stronger brackets at the windshield posts and rear corners; one piece shroud and windshield panels and one piece back and side quarter panels.

The toe board supports provide substantial bracing between sills and dash and also help to make a tight front compartment, keeping out the heat in summer and the cold in winter. Wood floor and toe boards are used in the front compartments, and all front compartments are thoroughly insulated at the dash, floor and toe boards. The dash insulation is made of felt and celotex; the floor and toe-board insulation is a combination of heavy felt and rubber mat. This construction eliminates sound, cold and heat and adds greatly to the quietness and smoothness of the new eight-in-line Buick.

The front seat frame and adjusting mechanism have been redesigned and lowered to provide deeper cushions.

All wheels are the same size and design as furnished on past models. Wheel balance is very important on high speed cars, and the wheels on the new Buick Eight are balanced, and extra provisions have been made so that, when tire changes are necessary, the wheels can easily be placed in proper balance. Special wheel equipment can be furnished for all models and provisions have been made to carry

(Continued on Page 6)

TRUCK REGISTRATIONS OFF SHARPLY IN JUNE

(Continued from Page 3)

compared with the corresponding month of last year:—

	June, 1930	June, 1929
Arkansas	164	324
Connecticut	535	870
Delaware	97	156
Florida	343	478
Idaho	215	347
Illinois	1,385	1,739
Maryland	506	653
Minnesota	781	976
Missouri	905	1,325
Montana	153	318
Nevada	40	45
New Hampshire	269	337
North Dakota	196	320
North Carolina	446	755
Oregon	350	419
Pennsylvania	2,613	3,380
Rhode Island	172	303
South Carolina	269	397
South Dakota	195	310
Utah	245	463
Washington	332	673
West Virginia	402	529
Wisconsin	1,094	1,677
Dist. of Columbia	153	318
Totals	11,860	17,112

SPRING SERVICE QUARTERS IN INDIANAPOLIS ENLARGED

Indianapolis, Ind., July 25. — Anderson's Spring Service, Inc., has just opened new and larger quarters here at 333 East Georgia St. Complete spring service for cars and trucks is offered with 18,000 square feet of floor space available for the work and a stock of more than 2,000 springs and main leaves in store. Products of the Service Spring Company of St. Paul, Minn., are handled exclusively.

YOUR FAITH
in the
Modern Standards of Living

THE oil burner is a product of a new age: It has taken its place with the automobile, the radio, the telephone and other modern conveniences. Daily, inventive genius meets the constantly increasing demand for devices that mean added comfort . . . more leisure . . . freedom from drudgery. In every industry the influence of this modern trend is evident: It is the motivating factor of manufacture as well as sales.

This modern age demands heating systems as efficient as travel systems. This world of our is just as interested in living comfortably as in travelling comfortably. A heating plant without an oil burner is as out of date as a car without a starter.

If you believe in the usefulness of such daily conveniences and necessities—if you have faith in the modern standards of living—you must recognize the growing importance of the oil burner in the community you serve . . . and the part it can play in the development of a broader market for you.

OIL HEATING INSTITUTE
342 Madison Ave., New York

OIL HEATING INSTITUTE
342 Madison Avenue
New York, N. Y.

Please send me, without charge, your booklet entitled, "Broaden Your Market."

Name .....

Address .....

.....1

"I CAN honestly recommend the Willys-Overland franchise to anyone planning to take on a line of cars that he can merchandise successfully."

—Anderson Brothers
Calumet, Mich.

Write or wire for franchise details

WILLYS-OVERLAND, Inc.
TOLEDO, OHIO

WILLYS-OVERLAND SALES CO., LTD., TORONTO, CAN.

Automotive Daily News

"Of, By and For the Entire Automotive Industry"

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Forthcoming Events

TO the earnest student of automotive development, anxious to keep abreast or ahead of actual happenings in his industry, we can offer no better advice than to follow closely the discussions and papers read at the various meetings of the Society of Automotive Engineers.

It has been our experience over a term of years that it would be indelicate to mention that when S. A. E. takes up a certain unit of the motor car in a serious way, that unit is in for considerable change and improvement within the next few years. Sometimes it takes five years to bring about the evolution, but more often three cycles will find the gap between discussion and improvement bridged by the engineers.

About five years ago the summer meeting of the Society of Automotive Engineers devoted a great deal of discussion to that highly controversial unit we call the "gear set." Evidently the engineers agreed that "something had to be done" and went home to begin their attack. At any rate Reo has been using a quiet transmission for some time; Studebaker gave us its free-wheeling device the other day and, while we mustn't break a confidence, we may say even now that two more well known makes will appear shortly with forms of improved transmission that show long and earnest work. Only an engineer will realize how comprehensive is the process in design, experiment and testing under conditions of actual service that goes between discussion and the introduction of any improvement to the general public. From now on innovations in gear set designs are likely to come thick and fast.

Just a few years ago the Society of Automotive Engineers began discussing front-wheel drive as a possibility for commercial production. Today there are two front-wheel drives on the market, with rumors of more to come.

At the present moment one of the subjects that is receiving the earnest consideration of the S. A. E. meetings, local and national, is that of injection type engines. This includes, of course, the Diesel type and the trend of thought is toward the possibility of adapting the injection engine to highway vehicle service. Diesel types have already been used successfully in airplanes.

Our guess is that the next few years are going to see some startling developments in the adaptation of the injection type of engine to highway vehicle use. It is too early to hazard a prediction as to what line of design this adaptation will take, but it is certainly going to be one of the outstanding developments of the next few years in the field of automotive engineering.

Imitation

IMITATION may be the sincerest form of flattery, if we are to believe the old saw, but we doubt that it is the soundest commercial policy. Our own good industry, in the course of its history, has given us some classic examples of imitation. This is particularly true in body styles. Whenever a manufacturer produces a particularly attractive body style, which makes a definite appeal to the buying public, he can be reasonably sure that he will have imitators within the next year. We do not have to mention names. Any student of the industry can think back and remember half a dozen cases wherein a successful body style has called into being numerous imitations.

The odd thing about the situation is that we do not recall a case in which the imitator has benefited materially by copying a competitor's design. The truth is that things change too quickly in this industry of ours to give an imitator much chance to benefit. By the time he has got his imitation ready to launch on the market some one else has come out with a new design, which being "the latest" has captured the public fancy and the carefully prepared imitation falls more or less flat. Constant pioneering in style, not imitating, is the way to catch and hold the American motor car market.

Buick 8s Have 4 Chassis in Line

(Continued from Page 5)

spare wheels on the fenders and at rear of cars.

On the demountable wood and disc wheels new hub covers are furnished, which completely inclose the attaching bolts and give the wheels a very clean and neat appearance. The demountable wire, wood and disc wheels are all interchangeable on the same hubs.

The instrument boards and panels are entirely new. The instruments are all grouped in one panel, the control buttons and levers are all uniform in design and harmonize with the instruments. Two-way lighting of the instrument panels is furnished. This gives indirect lighting when driving and direct lighting for the front compartment when desired.

An important improvement has been made in the windshield wiper on all models by adopting a parking control, which keeps the blade to the right of the driver and out of his line of vision when not in operation.

On all cars using special wheels mounted in fender wells, gravel deflectors are furnished to protect the large hubs and chromium-plated rear hub caps. These gravel deflectors are made from a special rubberized fabric and are attached to the rear end of the running board.

The following tire sizes are standard on the Buick Eight:

Series 8-90	19x6.50
Series 8-80	19x6.50
Series 8-60	19x5.50
Series 8-50	19x5.25

Smart, well-fitting tire covers have been developed for use on all models. These are obtainable in three qualities of material: black pyralin-coated parquet grain with black sateen back; black multi-coated smooth glaze with black sateen back, and black double-coated smooth glazed duck with white back.

A metal tire cover has been developed to use with fender-well equipped cars. These are painted and striped to harmonize with the body colors and give a very effective and pleasing appearance.

Other special equipment includes two types of heater equipment which have been developed for assembling to all models—the hot water type and the exhaust pipe type; Delco-Remy radio, and two original clock designs—one type made to attach to the header boards on closed bodies, the other a combined rear vision mirror and watch.

An unusually wide range of colors has been created for the new Buick eight, and a harmonious theme of trim and finish has been carried throughout the line.

The following features are found on all closed bodies: Fisher VV ventilating non-glare windshields, distinctive visors, screened ventilators in each side of cowl, adjustable front seats, all dome and side corner light switches on door post, lower front seats and deeper cushions, new type rear vision mirror with rounded ends, mahogany finish garnish mouldings around windows, button style trimming on all cushions and backs, insulated rubber floor mats in front compartment.

Floor board cut-outs have been provided around pedals, and control levers have been insulated with felt and pads to prevent draughts and water from getting through into the front compartment. Metal floor boards and tool compartments are all insulated with felt to eliminate noise in the body; aluminum scuff plates are provided on the sills of all door openings; silk finished curtains are furnished on rear windows; the hardware is of special Buick design, and all closed models are provided with a new type of rubber-cushioned door stops.

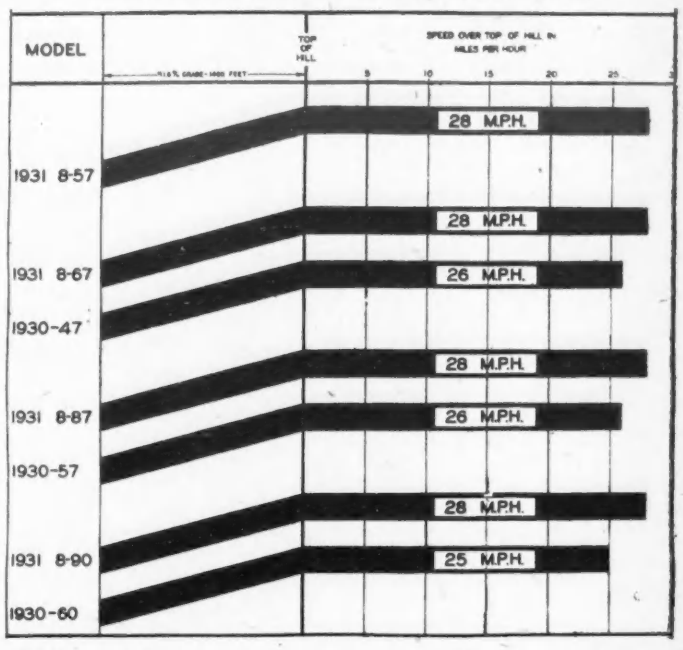
Model 8-90L has the following special equipment: Telephone for passenger communication with driver, special vanity cases and cigar lighter, and a glass partition which can be raised and lowered at the convenience of the passengers.

The following features are found on all open bodies: Ventilators in the top and sides of the cowl; seat construction that provides ample leg room with comfortable riding and driving position. Genuine leather upholstery furnished in three colors—maroon morocco grain, black morocco grain and brown Spanish grain. Front doors have remote control handle for convenience in opening doors. The tops are new with long, low rakish lines and fold into an exceptionally neat and small package when down; the slat irons are nickel plated and the bows of natural wood; bright finsihed top bindings are used on front and rear bows.

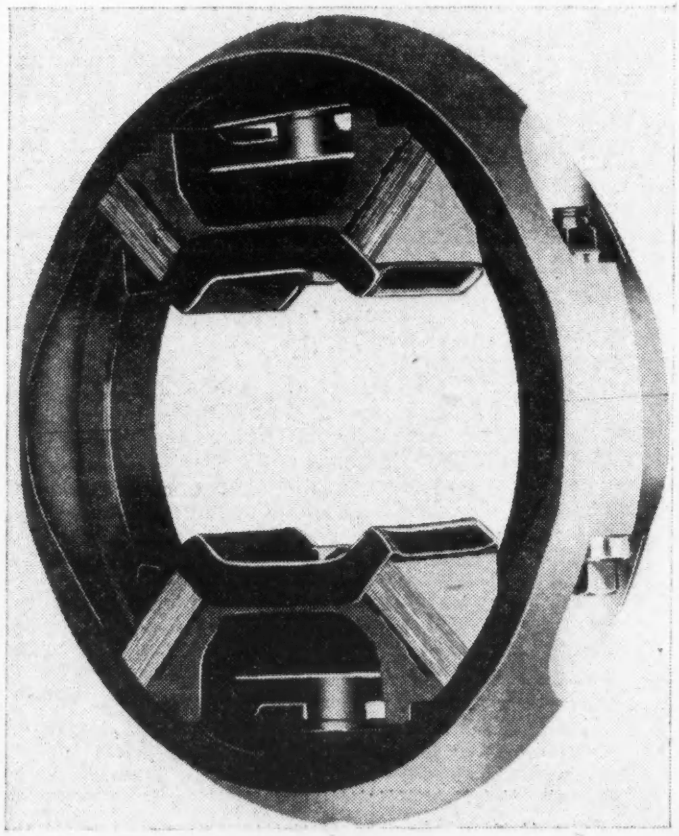
Roadsters are provided with a large dickey seat; the rear compartment has pockets on the side and a rubber mat on the floor. Tops on these models can be completely detached. Aluminum step plates are fitted to the fenders to allow easy access to the dickey seat. Model

(Continued on page 12)

Buick Hill Performance



THE ABOVE tests were made using four-door sedans, completely equipped and carrying a total load of 450 pounds. Speed at bottom of hill was five miles per hour



NEWLY DEVELOPED, ring-type crank shaft torsional vibration damper

COMING EVENTS

AUGUST

26-28—Chicago, Ill. Society of Automotive Engineers aeronautic meeting in conjunction with National Air Races.

SEPTEMBER

22-26—Chicago, Ill. American Society for Steel Treating meeting at Stevens Hotel.

29-Oct. 4—Pittsburgh, Pa. National Safety Council Annual Safety Congress.

OCTOBER

2-12—Paris, France. Automobile Salon.
6-11—Washington, D. C. Sixth International Road Congress.
6-11—Washington, D. C. American Roadbuilders' Association Convention.
8- 9—Detroit, Mich. Society of Automotive Engineers production meeting at Book-Cadillac Hotel.
22-24—Pittsburgh, Pa. Society of Automotive Engineers' transportation meeting.
16-25—London, England. Olympia Motor Show.

NOVEMBER

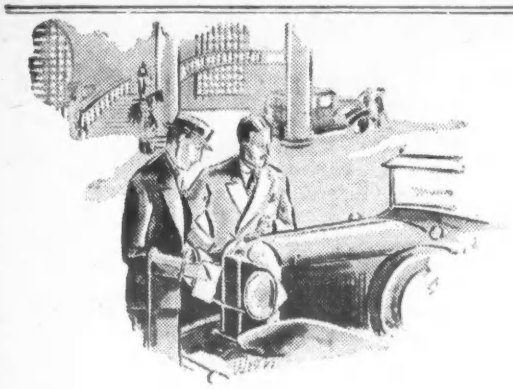
6-16—Berlin, Germany. International Automobile Show
8-15—Chicago, Ill. Automobile Salon at Drake Hotel
10-14—Cleveland, O. Motor and Equipment Association Show.
17-21—Cleveland, O. National Standard Parts Association Show.
30-Dec. 6—New York. Automobile Salon at Hotel Commodore.

DECEMBER

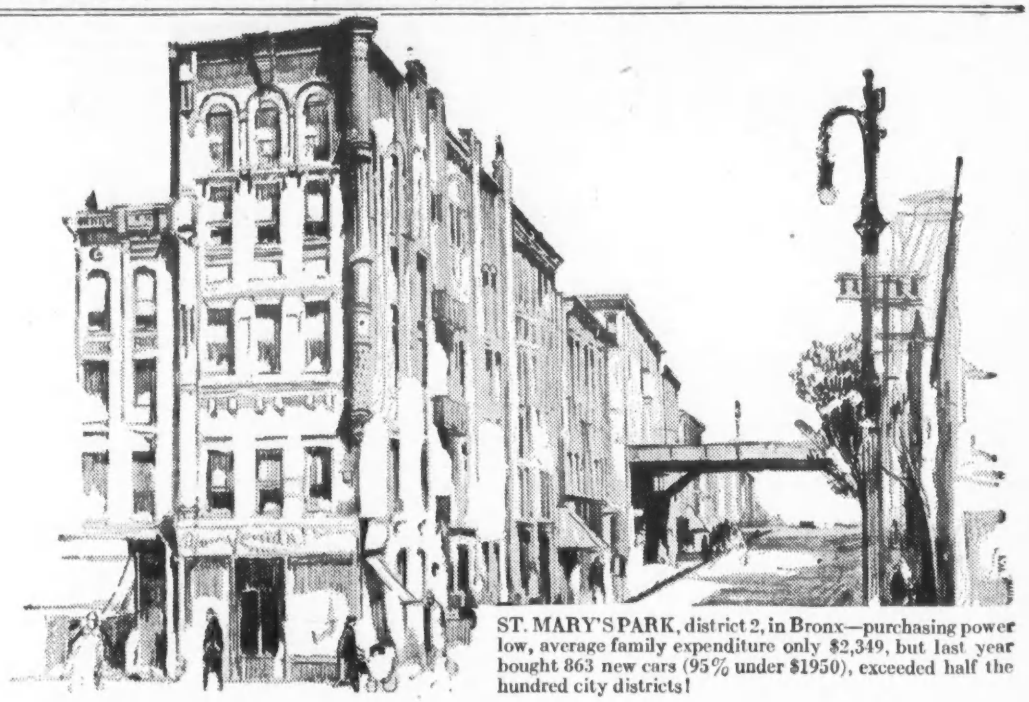
6-17—Brussels, Belgium. Automobile Exhibition.

JANUARY

3-10—New York. National Automobile Show.
24-31—Chicago, Ill. National Automobile Show.



In New York BUICK *get most sales from the middle incomes . . .*



ST. MARY'S PARK, district 2, in Bronx—purchasing power low, average family expenditure only $2,349, but last year bought 863 new cars (95% under $1950), exceeded half the hundred city districts!

The Great Middle-Class Car of America—and of New York!

THIS is the debut season of the industry, with new cars cropping up in the news and conversation stream. Studebaker starts a new phrase and a new idea—*free-wheeling*. Chrysler comes out with new eights. The American Austin emerges from the advertisements to the showrooms. And the American public, never allowed to forget that "When better cars are built, Buick will build them" —waits to see what Buick will do. And is rewarded this year by a radical change! Buick goes eights.

Between the rock-bottom price and universal utility of the Ford and the connoisseur's custom made coachwork, Buick has always held the middle road. Millions of people know it as the standard of automobile value, as reliably satisfactory and widely favored as blue suits, roast beef medium, or chocolate ice cream. It has been owned and driven and depended on by more people than any other car at or near its cost—the great middle-class, middle-price American automobile of the past quarter century.

And in New York, Buick is the most outstanding refutation of the mistaken notion that in New York you have to step up the income scale to sell cars. For Buick is still middle-class in New York.

Most of Buick sales last year were to families in the under-$5,000 income districts. And this year middle-incomed buyers are running Buick sales beyond the boom tops of last year! In the first half year, Buick sales increased to 5,478 in the Metropolitan Area, 3,929 in the city, both above last year's figures—the city increase, significantly, resulting from higher sales in middle-incomed districts which bought 47.7% of all models last year, and are buying 50.3% this year! Significantly too, the sixty-six $2,000-$4,000 districts stepped up sales of each model, but made the greatest increase in the most expensive model:

	Year 1929			6 mo. 1930		
Model	116	121	129	118	124	132
$5,000 & up dist.	24.3%	24.9%	34.3%	23.9%	24.2%	31.6%
$4,000-$4,999	22.2	22.7	22.9	22.5	22.4	17.7
$2,000-$3,999	51.0	50.3	40.7	51.8	50.8	48.0
Under $2,000	2.5	2.1	2.1	1.8	2.6	2.7

The figures given here are facts from The News 1929-1930 new car analysis—an allocation of all new sales, by makes and models to the hundred city districts of known purchasing power as defined by the N.Y.U. Bureau of Business Research.

This study shows the middle-incomed districts bought 53% of under-$1,950 cars last year (88% of all sales) and this year are buying 56%. (Sales-minded executives can have a photoprint of 1929 summaries, and district totals, by make and models, for January-June 1930 showing where sales cluster thickest to-day. Write!)

SO if Buick wants to do the best possible job of telling its public and its owners about these new models—Buick will use The News. It reaches *seven* families in *ten* in the heavy buying districts, concentrates 45% of circulation, sells 591,000 copies —covers half a million families missed by Paper "A", most-used automotive medium! And in the upper-incomed market of over-$4,000 districts The News sells 242,000 copies, gives 70.7% coverage, exceeds all other papers! In the rich suburbs, The News leads with 181,000 circulation!

Its huge volume circulation exceeding 1,300,000 copies, 94% concentrated within fifty miles, can make more sales in New York because it covers more prospects and buyers—more effectively on small pages—for less cost per prospect, per penetration, per sale! Consider The News for current schedules!

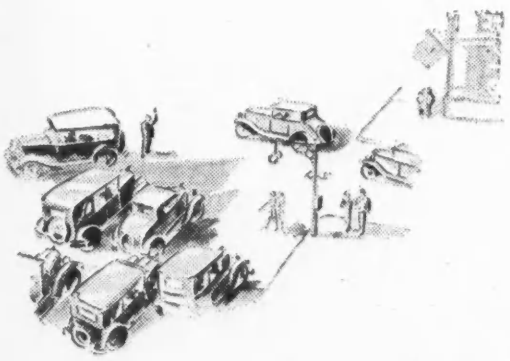
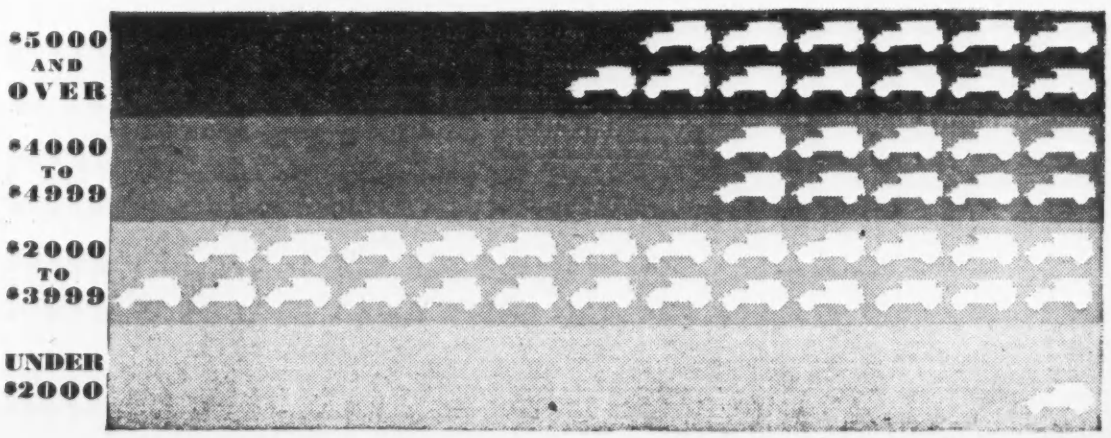


Chart showing distribution of Buick sales by income groups for 1930.



THE NEWS

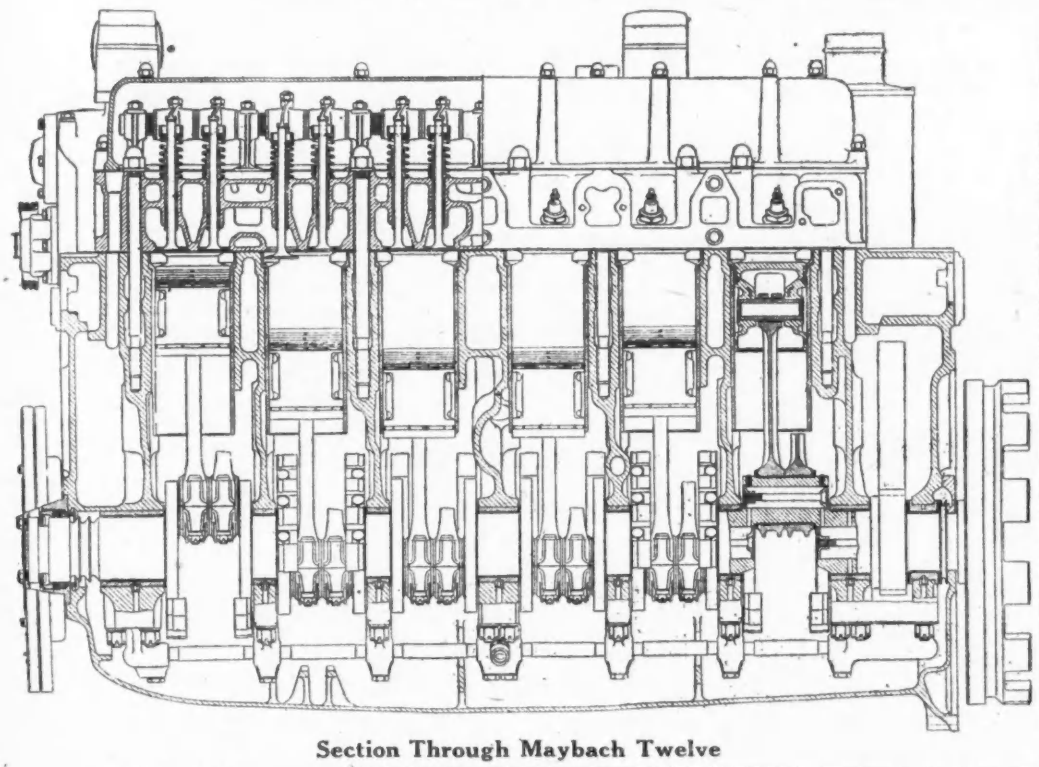
New York's Picture Newspaper

220 EAST FORTY-SECOND ST., NEW YORK

Tribune Tower, Chicago—Kohl Bldg., San Francisco

Production--Engineering--Factory-

An Interesting Twelve-Cylinder Chassis, the German Maybach



Section Through Maybach Twelve

THE introduction at the last show of the sixteen-cylinder Cadillac started renewed interest in multi-cylinder engines, and, in view of the almost general adoption of eights, the Maybach twelve story as it appeared in the July issue of our English contemporary, the Automobile Engineer, should prove of particular interest at this time. Part of the Automobile Engineer description follows:

As is well known, the Maybach Company has had considerable experience with aircraft engines, its latest productions being the power units fitted to the Graf Zeppelin airship. This experience has been fully drawn upon in redesigning the power unit of the Maybach chassis. Revised views upon piston speeds, torque, flexibility, and crankshaft balance led to the change over to a twelve-cylinder engine. In this respect the modern luxury trend is followed, pioneers in this direction being the Daimler Company in Great Britain and the Voisin Company in France. The power is transmitted through a single-plate clutch to a three-speed gear box, a Maybach over-speed being incorporated in the transmission. For the final drive helical bevel gears are employed. A bevel-type diferential is used.

The power unit consists of two banks of six-cylinders arranged in V form at 60 degrees to each other. The bore and stroke are 86 mm., and 100 mm. (approximately 3.386 in. x 3.937 in.), giving a displacement of 6,970 c. c. At 2,800 r. p. m. it is stated that 150 b. h. p. is developed, corresponding to a brake m. e. p. of 99.7 lb. per sq. in.

The engine block is built up of six main members. Made of aluminum, the upper half of the crankcase forms the main member, into which are pressed the separate cast-iron cylinder barrels. Every pair of opposite cylinder barrels are placed with width of one big end bearing apart. This has enabled orthodox connecting rods to be used in place of the forked rods fairly commonly employed in aircraft practice.

A single-cylinder head casting in gray iron is employed for each set of six cylinders. The two heads are interchangeable and are bolted to the crankcase, carrying the valve mechanism. The sixth member of the engine block is the oil pump, which is also made of aluminum alloy.

The top of each cylinder head is a plain machined surface and forms a flat top for each compression space, the compression ratio being 5-6:1. Two valves for each cylinder are employed, these being placed in line along the center line of each bank of cylinders. They are arranged vertically to the piston top, while the spark plugs are at an angle of 30 degrees, the sparking points being in small, turbulent pockets in the head.

Invar strut pistons are fitted, three gas rings and an oil scraper ring being used above the wrist pin, while an oil groove is turned near the bottom of the skirt. The tubular wrist pin is retained by wire circlips, and is arranged to float in the piston.

H-section drop forgings form the connecting rods, which as previously mentioned, are arranged side by side on a single crankpin having an outside diameter of 55 mm.

Made from annealed chrome nickel steel, the crankshaft is particularly robust and formed with disc crank webs to which separate balance weights are attached.

At the front end a disc vibration damper is fitted. This it will be observed, is placed outside the crankcase in order to remain always at a uniform temperature by being in a free air current.

The crankshaft is carried in eight bearings. The first seven bearings have a diameter of 73 mm., while the rear bearing is 66.5 mm. The first bearing is 74 mm. wide; the second, third, fifth, and sixth are 26 mm. wide; the fourth and seventh are 46 mm. wide, while the rear one has a width of 35 mm. Between the seventh and eighth bearings is mounted a helical timing pinion. The diameter of the crankshaft is enlarged at this point and the pinion retained by taper pins passing through an extension of the boss. It meshes with a composition gear mounted on the rear end of the camshaft.

A single camshaft is used for both banks of cylinders. It is carried on seven bearings and mounted within the V. Except for the rear bearing, which is slightly smaller, all the others are of 49 mm. diameter.

The valves are actuated by push-rods and rockers. The construction of the base of the push-rod is interesting, as it embodies a roller mounted in the end of a piston and held against the cam by a coil spring. The piston, of course, acts as a guide for the push-rod, a thimble end of which makes a semi-spherical bearing on the piston member. There is the usual spherical-ended junction between the push-rod and the rocker, the ball end being screwed into the rocker arm and providing the usual adjustment. Detachable valve guides are fitted, and these are [illegible] mm. long.

Midway along the camshaft is a small helical pinion for driving the oil pump spindle, while at the forward end of the camshaft is a large fibre gear meshing with a spiral wheel attached to the fan spindle. This spiral gear not only drives the the six-bladed aluminum fan, but it also serves as the intermediate gear for driving the water pump, dynamo and distributor. These auxiliaries are mounted on the crankcase in the V between the cylinder heads. The fan and auxiliary shafts are mounted in single-row ball bearings. Forced lubrication is provided for all engine bearings, and the valve and camshaft drive.

A distribution oil pipe is arranged beneath the crankshaft with drilled passages leading to the main bearings, a continuation of the drilled passage conducting oil to the camshaft bearing. Oilways conduct the lubricant into the crankshaft, which is bored throughout, as are also the crankpins.

Two Solex dual carburetors are fitted. Two channels catch the warm air passing from the radiator, one half being led through the crankcase and the other carried direct to the carburetors. The air is cleaned by an oil-wetted air filter.

The gearbox provides three forward speeds and a reverse, which with the overspeed gear provides six forward speeds in all. The ratios through the gearbox only are top 1:1, second speed 3.6:1 and first speed 5.36:1.

The constant mesh pinion is formed integrally with the clutch shaft, and is supported by a large single-row ball bearing.

The layshaft is hollow and is supported at the front end in a journal bearing, and at the rear end in a roller bearing of the type where movement of the roller is constrained by a shoulder on the outer race, in addition to running in a groove on the inner race.

The four gears on the layshaft are separate pieces mounted on splines. The rear gear on the layshaft is in constant mesh with the intermediate reverse gear.

A small roller bearing is housed in the constant mesh pinion and forms the spigot for the third motion shaft. This is splined throughout its length and carries the two sliding gears.

The gear box being built in unit with the engine, the casing is extended round the clutch to a facing on the crankcase in the usual manner. A central change lever is mounted on a large cover attached by set screws to the top of the casing.

Attached to the rear face of the gearbox is a large bracket containing a spherical housing forming the front end of the torque tube. This encloses a large universal joint running on roller bearings for the front end of the transmission shaft.

Incorporated in the torque tube is the Maybach overspeed gear. The effect of this gear is to reduce the ratio between the gearbox and the rear axle to 1.58:1.

It will be observed that the transmission shaft is continued to the center of the two-speed gearbox, where it terminates in a splined portion. Mounted on these splines is a doublt dog-clutch members formed with a central groove taking controlling pins. The dog member, therefore, can be clutched with either of the two adjacent gears. When in the forward position it connects the transmission shaft through the train of four gears to the rear transmission shaft. In the rear position the dog clutch provides a direct drive.

Each of the gears encircling the transmission shaft is mounted at the center on a roller bearing, and at the outer end on a ball journal bearing. The layshaft gears are formed integral with the shaft, the unit running on two roller bearings. It will be realized, of course, that the spiral gears are always in mesh and rotating. The width of the gears is 65 mm.

The gear is servo controlled. It is therefore only necessary to move a small lever mounted on the steering wheel when, as soon as the throttle is closed, the overspeed gear automatically cuts in.

The effect of moving the operating lever is to put pressure on the operating spring controlling the sliding dog clutch. This is not, however, sufficient to bring the dogs out of engagement, while taking the full engine torque. As soon, however, as the accelerator pedal is released, the cessation of the driving torque enables the spring to overcome the friction of one set of dogs, enabling the other set to engage.

The control is worked pneumatically through a special distributor shown diagrammatically in an illustration. Movement of the control lever on the steering wheel partially rotates the distributor barrel B, putting one end of the vacuum cylinder E in communication with the induction system A, and a vacuum reservoir D. The vacuum therefore causes the piston to move the sliding dog F lever and so operate the gear. C is a pipe connecting with the crankcase air vent.

REAR AXLE

Helical bevel gears are employed for the final drive. The reduction through these gears is 1:5.66, which when the overspeed gear is in use is reduced to 1:3.58. The pinion shaft is mounted in a self-contained housing and is fitted with a roller bearing, a ball journal bearing, and a double-row ball thrust bearing.

A bevel-type differential gear is employed, the sunwheels being mounted by splines on the axle shafts. The bevel wheel is bolted to a flange on the differential cage, the cage running in one plain roller bearing on one side, whilst on the opposite side are two taper roller bearings. The whole final drive and differential gear unit is mounted in a steel casting, while the banjo rear axle itself is an aluminium alloy casting.

An unusual feature in connection with the rear wheels is the fact that each axle shaft terminates in a flange approximately five inches in diameter. The center portion of this is drilled out for lightening, while the periphery is splined, and forms the driving connection with the detachable wheel. At both inner and outer ends of each axle shaft, a broad oil retaining washer is placed in contact with an enlarged portion of the shaft.

Each hub is mounted on a ball bearing and a roller bearing, two concentric distance sleeves being arranged between them. At the inner end of the hubs unusually elaborate precautions are taken to prevent oil leaking on to the brakes. The brake is very properly mounted outside the hub flange, permitting easy access.

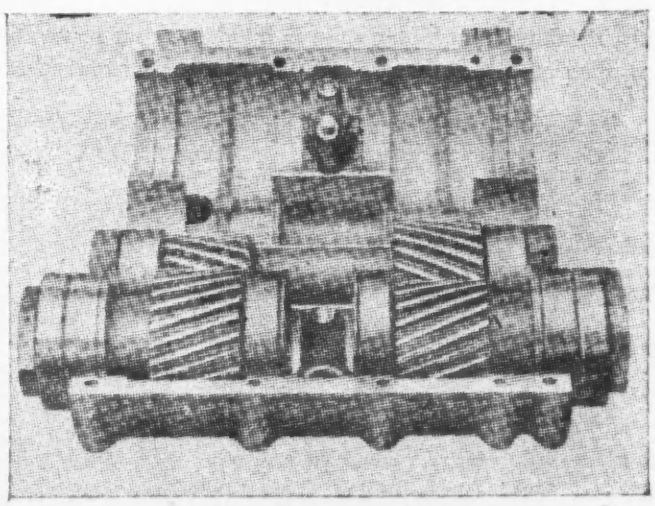
Of somewhat unusual design the brake brackets are splined on to the axle tubes between the hubs and the spring seat, whilst on the other side of the spring seat is a bracket retained by three large taper pins. This forms the support for the inner end of the brake operating shaft, and also the attachment for the shock absorbers.

Large two-shoe type brakes are employed, the diameter of the drum being approximately 17½ inches. The shoes are pivoted at the lower end, whilst at the top is a cam of most unusual form.

FRONT AXLE

An H-section forging is employed for the front axle, which is of the reversed Elliott type. Each hub is mounted on a ball and a roller bearing. Front whele brakes are fitted, the drum being attached to the outside of the hub flange. All four brakes are operated by the foot pedal through mechanical means,

(Continued on page 11)



OVERSPEED GEAR

POSITION OPEN

Sales Representative

A long established company, marketing mechanical devices with modern sales methods, desires a man as sales representative. We feel that the proper man should be from 35 to 40 years old. As our products are sold to the automotive industry, the successful applicant should have a background, preferably in connection with automotive engineering. Our products as a type might be classified along with gears, axles, anti-friction bearings, wheels, etc. The man who can qualify will be compensated on a salary basis plus traveling expenses. The territory is principally in the Detroit area, with headquarters in Detroit. Reply in detail, giving past connections and where now employed. State age and salary expected. All replies treated in confidential manner.

Address BOX 264, AUTOMOTIVE DAILY NEWS, 420 LEXINGTON AVE., NEW YORK, N. Y.

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GASOLENE AND OIL

combine to give perfect ANTI-KNOCK performance

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ONCE - ALWAYS

WISE motorists do not depend *solely* on anti-knock gasolene to prevent engine knocks. They place part of the burden of maintaining anti-knock performance on their oil.

Koolmotor Gasolene and Oil combine to give perfect anti-knock performance.

Koolmotor Gasolene—the *original* high test, anti-knock green gas—is refined from crudes that contain inherently high anti-knock qualities. Special processing at the refinery and careful testing in the laboratory insure Koolmotor's ability to give knock-free performance.

The final and most conclusive proof is furnished by actual road tests where Koolmotor is forced to climb the steepest hills and respond to impulsive pressure on the accelerator without knocking. You can feel sure that, before a single gallon of Koolmotor Gasolene is ever offered for your use, it has proved, in many ways, its ability as a real anti-knock motor fuel.

Koolmotor Oil—the *perfectly balanced* motor oil—lends valuable assistance in producing anti-knock performance. It maintains its body at high temperature and prevents oil from working up past the pistons and forming carbon—a condition which increases fuel knocks.

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Cities Service Oils & Gasolene

NEW CAR SALES TACTICS SELLING NASH USED CARS

Dubuque, Ia., Dealer Offers Buyers 1,000-Mile Guarantee

NEW car sales tactics are being used in the sale of reconditioned cars, as distinguished from used machines, with plenty of advertising being used, by Schrup Motor Car Company, Nash dealer, of Dubuque, Ia., to clear machines taken in on trades.

In a three-quarter-page ad the firm sets forth that those in the market may purchase a car with a 1,000-mile guarantee, price to be $250, or over. A certificate, given the purchaser, is to the effect that the car has been tested and inspected, and is guaranteed for the thousand miles to be free from badly worn and defective mechanical parts, these to be replaced free, plus a charge of one-half the regular flat rate for installation. The certificate identifies the car, speedometer reading and name of official signing for the company.

Still another ad in the same issue of the paper, two columns, six inches, is devoted to used cars as displayed at the open-air lot. This ad follows the ordinary run, fishing, camping and holiday trip car specials at a price. Other ads, divorced from the used car reconditioned jobs, are devoted to pushing the Nash at the main sales rooms. All ads feature the super-service quality of the garage and service station in conjunction with the sales feature of the firm.

100 CARS DAILY OUTPUT AT SEATTLE FORD PLANT

Seattle, Wash., July 25.—Reports received at the Ford Motor Company assembly plant in Seattle are that Ford sales in the Northwest, served by the local plant, are running 20 per cent. ahead of June. Schedule at the plant is running close to 100 cars daily.

The truck schedule has been increased 300 per cent. for July over June, the reason being the increased demand for the 157-inch wheelbase Model AA Ford truck. Orders are well ahead. Demand is keenest from the fruit regions of central Washington. The heavy schedule will continue for at least another month, possibly longer.

DARBY GETS HOUSTON POST WITH CHEVROLET MOTORS

Houston, Tex., July 25.—Appointment of W. N. Darby as assistant zone manager, Houston, for the Chevrolet Motor Company of Texas, has been announced by C. P. Simpson, zone manager. Previous to taking up his new duties, Mr. Darby was city sales manager of the Dallas branch.

NEW JERSEY PLANT IS SOLD BY UNITED STATES RUBBER

North Bergen, N. J., July 25.—Joseph Gatti, New York, has taken title to the former plant of the Peerless Rubber Company here from the United States Rubber Company. The plant includes brick buildings and a plot 125x700 feet. The buyer gave back to the seller a purchase money mortgage for $250,000.

HYLAND GIVEN DISTRICT JOB BY TRANSPORT CORPORATION

Seattle, Wash., July 25.—B. L. (Bernie) Hyland has been appointed district representative in charge of wholesale work for the Transport Corporation, according to announcement of August Johnson, president and general manager. Hyland has been in the wholesale department of the firm since January.

ORANGE FORD DEALER SHIP TO NORTON MOTOR SALES

Orange, N. J., July 25.—The Norton Motor Sales, with sales and service headquarters at 579 Scotland Road, here, has been appointed Ford dealer.

FORD'S SAN FRANCISCO PLANT SCHEDULE POINTS TO LAST HALF RECORD

San Francisco, Cal., July 25 (UTPS).—Basing its production schedule upon the sales during the first six months of the year, the Ford plant is working on schedules looking for the best half year in its history from now until the end of 1930. Exact registration figures compiled for the first five months of 1930 indicated that the sale of new Ford passenger cars in California showed an increase of 11.2 per cent. over the number for the corresponding period of last year; this exclusive of trucks and commercial cars.

There were 37,641 new Ford passenger cars registered in the five-month period ending June 1, 1930, compared with 33,858 in the corresponding period of 1929. Of the total number of cars of all makes registered, 42.7 per cent. were Fords.

But the percentage stands even higher at the end of June, indicating 43.1 per cent. of all passenger cars sold in California were Fords, and, up to the last week of July, state-wide sales records evidence that this percentage is being retained.

The Ford assembly plant is especially jubilant, however, over the Ford commercial car records, showing that a full 54 per cent. of all commercial cars sold in the state for the six-month period ending June 30 were Fords, the figures being slightly more than 7,200 Ford commercial cars.

FLINT'S AIDES TAKE OVER ANSONIA FORD DEALERSHIP

Ansonia, Conn., July 25.—The Dutee W. Flint Ford dealership here has been taken over by three of its personnel and incorporated under the name of Community Motor Sales. Incorporators are Alton V. Pitts, Daniel P. Sullivan and Miss Helen E. Karbowski. The dealership's showrooms are at Main and Tremont Steets.

USED CAR SHOWROOM ADDED BY BALDERSTON-CHEVROLET

Newark, N. J., July 25.—Balderston-Chevrolet, Inc., 432-38 Princeton Ave., announces the opening of an additional used car showroom at 214-216 South Clinton Ave.

NEW FORD DEALER IN DALLAS OPENS TEMPORARY QUARTERS

Dallas, Tex., July 25.—Opening of the Owen Motor Company, newly-appointed Ford dealership, took place this week with temporary quarters at 314-16 North Collett Ave. B. B. Owen, for years associated with automotive industries in Texas, and president of the Texas Automotive Trades Association during 1929, is head of the firm. Frank E. Beck is in charge of sales, while Robert R. Dodson superintends the service.

MULLINS for STAMPINGS
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MULLINS MANUFACTURING CORP.
In the Cleveland and Pittsburgh District, Main Office and Works, Salem, Ohio.
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CUMULATIVE NEW PASSENGER CAR

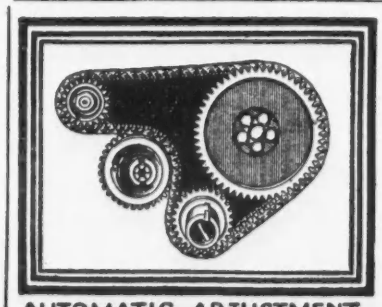
Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising desring county, city or town lists, or lists of owners in any given

Some of this data has been published previously, but it is

Returns for today: Alabama, Connecticut,

States	Auburn	Austin	Black Hawk	Buick	Cadillac	Chevrolet	Chrysler	Cord	DeSoto	Dodge	Durant	Essex	Ford	Franklin	Gardner	Graham	Hudson	Hupmobile	Jordan	La Salle	Lincoln
Alabama				36	6	755	22		15	25		15	990			24	12	15		6	1
Arkansas	1	1		17	1	280	14		9	23	6	14	430			7	5	2		2	2
Conn.	36		2	200	40	795	171	2	116	160	23	156	1592	85		93	72	99	9	48	13
Delaware	1			43	11	189	35	1	5	5	11	13	348	1		7	6	10		5	1
Florida	4			56	5	675	74	1	28	37	5	47	1239	6		46	32	14		10	2
Idaho	1			20		256	16	1	8	25	21	19	381	1		9	9	4			1
Illinois	68		1	532	61	3117	490	26	298	449	71	314	6752	58	8	232	167	217	1	88	46
Maryland	12			111	7	1066	83	1	24	69	18	99	1429	4		72	31	45	1	11	4
Minnesota	7			73	6	1725	139	3	43	92	23	69	2789	2	3	93	35	53		14	3
Missouri	18	1	3	127	19	1893	140	8	60	159	31	100	2857	8	12	114	55	51		25	3
Montana	5			23	3	270	26	2	29	22	13	26	369	6		4	9	14		7	
Nevada	1			6	1	49	7		4	9	4	3	69			2	3				
N. Hamp.	10			35	3	270	38		19	30	8	46	573	2		17	13	18	2	3	1
N. Ca'lina	1			56	4	910	81	1	26	86	2	46	1599	2		30	37	10		1	5
N. Dakota	1			15	1	590	47		8	35	23	23	831	1		17	12	2			
Oregon				55	9	431	37	1	29	48	59	26	760	6		31	16	6		8	
Rh. Isle.	8			63	6	332	70	1	66	50	10	44	604	4		25	15	15		8	2
S. Carolina				23	1	389	16		23	20	2	26	799	1		5	15	9			1
S. Dakota	3			27	1	645	54		10	61	25	42	825	1		16	13	19			
Utah	9			20	5	324	34	2	31	42	45	35	586	2		33	17	9		3	
Wash'gton	12			116	6	436	71	2	62	54	68	31	1129	5		17	23	45		6	
W. Va.	6			42	2	805	63	3	35	129	29	69	1265	6		60	30	21	1	8	3
Wisconsin	19		1	158	14	1666	168	2	71	170	48	160	2591	14	1	96	71	36	2	6	1
D. of C.	11			57	7	431	32	1	18	33	13	46	1078	3		39	22	32	1	15	5
Totals, '30	234	2	7	1911	219	18299	1928	58	1037	1833	558	1469	31885	218	24	1089	720	746	17	274	91
Ala., '29	2			75	5	855	58		5	77	8	107	1717	3		27	47	13		11	2
Ark., '29				27	6	457	44		33	59	26	32	873	2		16	11	3		6	2
Conn., '29	66		2	238	40	1011	225		197	224	52	360	1518	44	2	190	135	130	7	52	12
Del., '29	14			22	7	197	12		1	9	42	57	407	3		2	16	7		10	
Fla., '29	5			109	9	770	102		27	86	7	128	1705	13		71	64	38	3	17	6
Idaho, '29	3			57		523	28		49	82	97	75	747	2	1	30	27	11			1
Ill., '29	206		8	647	141	3333	574		409	785	234	1325	6742	50	27	473	558	323	6	215	60
Md., '29	17		4	123	11	1253	118		50	102	56	266	1669	10		44	66	55	2	19	1
Minn., '29	36		2	145	9	1741	119		85	159	140	375	3930	7	2	142	124	67	2	21	8
Mo., '29	30		2	266	23	2245	128		87	263	145	540	3614	28	20	125	110	86	4	51	23
Mont., '29	24			71	4	561	65		47	125	66	135	773	13		54	56	16			3
Nev., '29				15	4	59	10		6	25	7	16	94	1		2	8			4	
N. H., '29	8			48	4	334	42		50	47	43	117	482	9		29	29	14	1	10	2
N. C., '29	6			89	5	1224	132		60	146	32	192	2402	4	1	24	78	13		8	3
N. D., '29				36	2	706	38		35	72	57	66	1217			29	24	2		4	1
Ore., '29	5		1	57		471	46		38	72	111	95	877	8	4	31	27	15		6	2
R. H., '29	32		1	122	14	524	89		101	86	26	162	629	17	3	69	41	28	4	24	3
S. C., '29				42		711	43		27	31	3	58	1251	1		10	30	6		2	1
S. D., 29	9			73	1	962	56		39	122	129	111	1544	4		59	34	42		4	
Utah, '29			1	37	4	345	20		26	82	107	112	620	3		38	31	17		4	
Wash., '29	42		4	237	9	712	198		118	190	282	276	1748	14		77	91	54	1	8	2
W. Va., '29	7		4	92	2	1136	96		93	173	61	237	1354	4		98	43	26	3	14	4
Wis., '29	43			441	17	2599	240		202	327	178	897	3864	34	4	273	271	87	3	30	10
D. of C., '29	11			90	17	376	57		19	20	9	137	950	8	1	61	36	34		15	3
Totals, '29	566	*	29	3159	334	23305	2540	*	1804	3364	1918	5876	40727	282	65	1974	1957	1087	37	535	149

*Not in production at that time.


AUTOMATIC ADJUSTMENT

54 *auto models* • 51 *trucks* • 15 *buses* • 4
All with Link-Belt s

Auto Models
Willys Six "98-B"
Willys-Knight Great Six
Willys-Knight "70-B"
Willys Eight
Whippet Four "96-A"
Stutz "MA"
Stutz Blackhawk "L-6"
Stutz Blackhawk "L-8"
Cord (Front-Drive)
Lancia (Italy)
Isotta Fraschini (Italy)
Ruxton (Front-Drive)
Graham Cus. 8, 127" w.b.
Graham Cus. 8, 137" w.b.
Graham Std. 8
Graham Spec. 6
Graham Std. 6
Graham Spec. 8
Marquette "30"
Duesenberg
Yellow Cab
Renault 6 (France)
Renault 8 (France)
Auburn "6-85"
Auburn "8-95"
Auburn "125"
Kissel "6-73"
Kissel "8-95"
Kissel "8-126"
Reo "15"
Gardner "136"
Gardner "140"
Gardner "150"
Elcar "75A"
Elcar "8-95"
Elcar "8-96"
Elcar "8-130"
Elcar "8-140"
Le Moon Taxi
Du Pont Eight
Jordan
Peerless Master 8
Peerless Custom 8
Locomobile "8-86"
Locomobile "8-80"
Locomobile "90"
Weiner (Austria)
Stearns-Knight "80"
Bradfield Taxi
Windsor "6-72"
"6-77" "8-85" "8-92"
Hansa (Germany)
Auto Motors
Continental "H8H" "11E" "12K" "14WH"
"14E" "14K" "15C" "15S" "16C" "E"
"16R" "16S" "17S" "18E" "18R" "18S"
"20R" "21R" "31R" "32R" "34L"
Lycoming "GT" "GS" "MD" "HD" "7S"
"4SL" "TS" "WR" "GR" "A"
"MDG" "TR" "4HM" "FDA"
Stearns Yellow Sleeve Valve
Wisconsin "Y" "Y" "S" "HX" "ZZ"

DETAILS OF GERMAN MAYBACH, 12 CYLINDERS

(Continued from Page 8)

no servo being employed. The leverage is so proportioned, however, that without having to exert undue pressure by the foot, adequate force is applied to the shoes.

The hand brake lever also applies all four brakes. It is operated through a very large angle, so that it exerts its full braking force on the drums even when the foot actuation has passed its limit.

Steering

A worm and nut is employed for the steering. The wormshaft is supported by two taper roller bearings. The drop arm, its shaft, and the fingers in contact with the nut are formed as a single piece, the shaft being mounted in a roller bearing and a ball bearing.

The steering nut consists of a hard metal shell with an anti-friction metal core for the screw threads. It will be observed that the junction surface between case and core is formed as a rough screw thread coinciding with every other thread on the worm. Right or left hand steering can be fitted as desired.

Frame

A pressed steel frame is employed, the side-members being of the usual U-section which is tapered th roughout is length. In plan, the side members are parallel fro the rear with the cross-member behind the gear box, from which point they taper inwards to the front end of the power unit. In side view the upper surface of the main-members is horizontal with a gradual sweep over the rear axle. At the center of the frame the section is 231 mm. deep, by 90 mm. wide. At its widest portion the frame is 1,184 mm. across. From the ground to the top of the frame is 345 mm.

The front end of the frame is closed by a tubular cross-member. Further stiffening is given to the structure by the rear engine suspension brackets which bridge the frame near the clutch. Behind the gear box is a substantial U-section cross-member, through a hole in which the transmission shaft passes. Another cross-member is arranged midway between this member and the rear axle, and from this the batteries are supported. A tubular member is arranged just behind the rear axle, and from this and a small tube closing the end of the frame is supported the petrol tank.

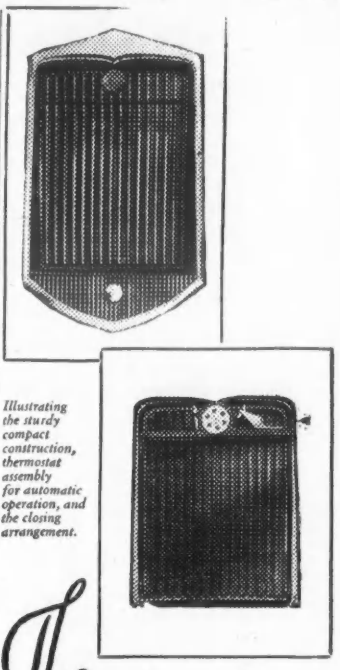
Semi-elliptic springs are fitted throughout. They pass under both axles and are arranged beneath the frame side-members. The ends of the springs bear on steel rollers running in greased pads, special guide plates being provided to limit side play.

The wheel base is 143.5 inches, the over-all length 200 inches, the track 58.6 inches, and the minimum ground clearance 7½ inches.

General

Careful detail work, with a view to reliability and adequate strength, is characteristic of the lay-out. The car should give an excellent all-around performance, as, with a total chassis weight of 1.82 tons, the weight per horse power is only 26.84 pounds. It is claimed that the car will attain a speed of ninety miler per hour.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRING RESULTS



Illustrating the sturdy compact construction, thermostat assembly for automatic operation, and the closing arrangement.

REGISTRATION STATISTICS, JUNE, 1930

Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Readers section, may obtain these by addressing any of these three companies

given here complete for the convenience of our subscribers

Nevada, Oregon and Washington

States	Marmon	Marquette	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Studebaker	Stutz	Viking	Whippet	Willys	Willys Knight	Windsor	Miscellaneous	Totals
Alabama	4	14	7	4	19	9			32	3	5	15			9	10	2			2,055
Arkansas		4	9	3	4	1		3	21	8		10			2	2	1			882
Conn.	30	35	139	59	74	125	7	20	103	160	35	116	1	4	12	39	30		1	4,702
Delaware	1	3	3	5	4	17		2	22	29		9			3	6	1		1	798
Florida	13	17	23	12	27	16		3	58	52	12	10		2	10	10	8			2,554
Idaho		10	16	6	8	1			31	18	1	16			9	5	1			894
Illinois	72	124	405	97	446	323	13	42	543	409	38	422	6	17	82	186	88	20	10	16,339
Maryland	11	20	66	32	59	57	1	8	111	98	12	73			36	37	16	23		3,747
Minnesota	12	20	76	37	104	32	1	2	392	181	13	116		2	67	124	26	1	1	6,379
Missouri	27	30	112	49	143	70	3	32	190	141	9	63		4	73	104	23	15		6,772
Montana	5	4	25	11	9				37	33	4	15			16	13	5			1,005
Nevada		1	4	1	4				5	2		6				1	1			183
N. Hamp.	11	7	44	7	25	16		3	52	30	13	20		1	6	16	6			1 345
N. Ca'lina	5	27	19	10	29	15	2	2	74	49	3	21			13	22	3			3,189
N. Dakota	3	8	43	14	21	1			78	52	3	21		3	39	53	9			1,954
Oregon	7	13	23	14	27	21		5	49	55	8	41		2	7	15	7			1,816
Rh. Isle.	2	8	44	17	22	30	12	9	49	51	17	27			3	19	15			1,648
S. Carolina	1	11	9	2	10	9			16	16	2	8			3	2	1			1,420
S. Dakota	5	12	24	6	87	7	1		81	37	2	44		2	24	28	3		1	2,106
Utah	7	8	17	16	21	12		1	22	19	3	23	2	1	4	2	2			1,357
Wash'gton	5	27	37	14	39	29		4	89	44	4	81		3	20	34	22		1	2,536
W. Va.	23	18	41	32	40	28		3	118	91	5	46	1	3	45	76	16			3,162
Wisconsin	19	50	199	60	138	50	10	15	330	207	21	146		6	69	122	22		5	6,764
D. of C.	5	11	21	29	57	48	12	4	58	71	3	43			6	6	13		5	2,236
Totals, '30	268	482	1406	537	1417	917	62	158	2561	1856	213	1392	10	50	558	932	321	59	25	75,843
Ala., '29	1	10	36	8	18	18			51	57	6	44	3	1	120		5		1	3,391
Ark., '29	6	5	23	10	9	4			65	53	2	6			54		2		1	1,837
Conn., '29	76	67	245	85	141	140	12	29	140	336	42	157	2	14	235		70	2	17	6,315
Del., '29		13	34	10	13	10	2	2	25	67		15		3	37		7		1	1,045
Fla., '29	5	21	44	20	44	17	1	4	50	94	10	35	3	2	142		17	1	10	3,680
Idaho, '29		1	64	16	27	4			72	68	7	49		2	98		16			2,157
Ill., '29	216	157	1034	252	853	370	43	28	716	1396	128	490	12	68	1040		169	22	98	23,208
Md., '29	32	57	128	21	90	47	13	11	151	185	16	68	1	2	184		37		3	4,912
Minn., '29	31	34	146	58	179	46	11	12	395	533	20	158	2	8	667		102	7	15	9,538
Mo., '29	67	61	203	70	252	62	34	30	233	374	29	141	2	9	593		53	16	20	10,039
Mont., '29	35	23	96	17	51	10	1	3	117	102	13	58		1	145		31		3	2,719
Nev., '29	3	2	7	4	11	1	1		3	5	1	8		1	3		3			304
N. H., '29	24	16	88	19	53	24	2	4	63	89	11	35	1	4	77		19		9	1 807
N. C., '29	2	53	39	24	57	15		1	109	172	9	43		2	183		11			5 139
N. D., '29	16	8	67	19	71	2			94	112	2	37	1	2	205		39		3	2,967
Ore., '29	12	11	54	19	54	14		5	67	91	19	50	1	2	55		25		2	2,347
R. H., '29	21	15	75	14	51	26	17	11	80	144	36	52		6	94		42		9	2,663
S. C., '29	4	18	19	17	35	3		2	42	77	5	10	1	1	44		3			2,497
S. D., 29	30	11	78	13	138	8		1	150	125	10	86		4	312		32		3	4,190
Utah, '29	9	11	45	8	39	10		3	36	48	7	28	3	3	69		19		2	1,787
Wash., '29	42	20	127	39	154	32	7	5	225	199	17	119	2	8	190		77		3	5,529
W. Va., '29	63	25	107	29	105	25	1	8	144	168	13	61		8	289		42		7	4,542
Wis., '29	86	64	579	153	394	83	25	14	520	938	44	269	2	18	847		103	1	39	13,699
D. of C., '29	22	27	59	22	98	39	8	11	25	138	9	51		4	48		15	1	8	2,429
Totals, '29	803	730	3397	947	2937	1010	178	184	3573	5571	456	2070	36	173	5731	*	939	50	254	118,746

The new improved Vertical Automatic

PINES WINTERFRONT offers New Profit Opportunities for Dealers!

AT the new low prices of only $15 for the small size and only $20 for the large size, there will be a heavy demand this coming season for the new improved vertical type of Pines Automatic Winterfronts. Now no car owner can afford to be without this up-to-date equipment. The new low prices will permit countless thousands of drivers to discard old methods and equip their cars with the automatic Pines Winterfront. *Dealers will collect the profits.* Prepare now for the biggest Winterfront season you have ever seen. Get in touch with the nearest Pines Winterfront distributor at once or write direct to the factory if you do not know his name.

Small Size now only $15 **Large Size now only $20**

PINES WINTERFRONT COMPANY
1151 N. Cicero Ave., Chicago

45 *auto motors* • 16 *marine motors* • • •

silent chain equipment

Mack Trucks, Inc., (Mack), (Generator)
Buda "214" "260" "298"

Buses
Menominee, Ruggles, Union, United, Day-Elder, White, Garford, Brockway, Maccar, Kissel, Larrabee, Gramm

Yellow Parlor Coach "Y"
Yellow Coach "X"
Graf & Stift (Weiner)

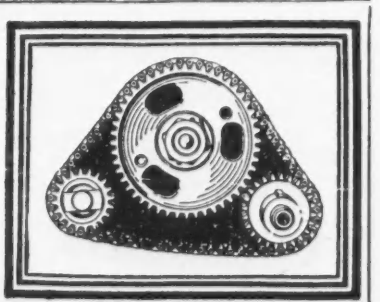
Trucks
Atterbury, Selden, Stewart, Brockway, Stutz Fire Engine, F. W. D. (Trans.), Paige, Federal, Maccar

Oshkosh (Trans.)
Le Moon, Reo Jr. Speed Wagon, Moreland, Standard, Stoughton, Nelson, Kleiber, Gramm-Bernstein, Corbitt, Century, Indiana, Larrabee, Gotfredson, National, Acme, Lange, Eagle, Kenworth

Clark, King-Zeitler, Gramm, Towar, Victor, Diamond T, Sanford, Day-Elder, Divco, United, Witt Will, Oneda, Hahn, Kissel, Schacht, Hayes-Anderson, Luverne, Willys-Knight, Willys Six, Sterling, Perl (Austria), International, Fisher

Marine Motors
Stearns, Universal, Loew, Sterling, Fay & Bowen, Wisconsin "YM", Regal "GC" "KC" "GE" "KF" "GF", Buda, Palmer, Hallett, Gray, Niagara

LINK-BELT COMPANY
INDIANAPOLIS -- DETROIT 3982-B



MANUAL ADJUSTMENT

Many Mechanical Refinements in New Buick Eights

(Continued from Page 6)

8-94 is equipped with a tool pocket in the left front door, an adjustable front seat and a folding foot rest in the rear compartment. Models 8-64 and 8-94 have a locking handle on both side and top deck doors.

All phaetons have arm rests in the rear seats. Models 8-55, 8-65 and 8-95 are provided with velvet carpets in the rear compartments and folding plated foot rests. Leather robe rails are furnished on models 8-55 and 8-65.

Specifications

DETAILED SPECIFICATION SERIES 8-50

ENGINE

Type	Valve in head
Number of cylinders	Eight
Bore and stroke	2⅞x4¼ in.
Displacement	220.7 cu. in.
Actual H. P.	77 at 3,200 r.p.m.
S. A. E. rated H. P.	26.45
Torque	156 ft. lbs. at 1,400 r.p.m.
Compression	97 lbs. per sq. in.
Compression ratio	4.8-1
Firing order	1-6-2-5-8-3-7-4
Gas tank capacity	16 gals.

CRANK SHAFT

Material	Special carbon steel
Weight	94.5 lbs. with counter weights and balancer
Bearings, Diameter and Length—	
Front	2⅛x1⅜ in.
Front center	2⅜x1¼ in.
Center	2⅛x1⅞ in.
Rear center	2½x1¼ in.
Rear	2⅜x1¾ in.
Number of Bearing Studs—	
Front	Two ½ in. diam.
Front center	Two ½ in. diam.
Center	Two ½ in. diam.
Rear center	Two ½ in. diam.
Rear	Two ½ in. diam.

CAM SHAFT

Material	Carbon steel
Bearings, Diameter and Length—	
Front	2 3/32 x1 1/32 in.
Front center	2 7/32 x 1/16 in.
Center	1 31/32 x 1/16 in.
Rear center	1 7/32 x 1/16 in.
Rear	1 1/32 x1 7/16 in.

CONNECTING RODS

Material	Carbon steel
Length C. to C	9 in.
Lower End Bearings—	
Material	Babbit
Diameter	2⅛ in.
Length	1⅜ in.
Cap bolts	Two ⅜ in. diam.
Wrist pin diameter	¾ in.

VALVES

Type of mechanism	Roller
Material—	
Inlet	Nickel chromium
Exhaust	Silchrome No. 1
Clear Diameter—	
Inlet	1⅜ in.
Exhaust	1⅜ in.
Lift	.340 in.
Stem diameter	.3392 in. Ex. .3407 in. inlet
Spring Pressure—	
Valve open	98-109 lbs.
Valve closed	30.5-40.5 lbs.
Valve lash	.008 in.
Timing—	
Inlet opens	1½° B.U.D.C.
Inlet closes	56½° A.L.D.C.
Exhaust opens	54½° B.L.D.C.
Exhaust closes	30½° A.U.D.C.

TIMING GEARS

1⅛ in. gear drive

Material—	
Cam shaft	Textolite gear
Crank shaft, generator	Steel gear

PISTONS

Material	Cast iron
Compression rings	Two ⅛ in.*
Oil control rings	One 3/16 in.*

*Above pin.

LUBRICATION SYSTEM

Type	Thermostatic shutter control rods, cam shafts bearings and rocker arm shaft.
Pump type	Gear
Oil pressure	35 lbs.
Capacity—Dry engine	9 qts.
Capacity—Refill	7 qts.
Oil Filter	A. C.
Oil temperature regulator	Water cooled

COOLING SYSTEM

Type	Thermoctatic shutter control
Pump type	Centrifugal
Pump drive	Generator shaft
Radiator type	Harrison ¼ in. Hex.
Core area	398.5 sq.in.
Core thickness	2¼ in.
Capacity system	3 gals.
Fan diameter	17 in.
No. Blades	4
Fan drive	⅝ in. V belt
Fan bearings and water pump bearings	Plain
Fan lubrication	Oil self-contained pressure feed

CARBURETOR

Make	Marvel
Type	Single
Model	T-3
Throttle diameter	1⅛ in.
Heat control	Semi-automatic
Inlet manifold diameter	1⅜ in.
Fuel feed	A.C. pump
Air cleaner and silencer	A.C.
Riser	1⅜

MISCELLANEOUS

Crank Case—Upper—	
Material	Cast intergral with block
Cylinder head bolts	20 bolts and 2 studs ⅞ in. diam.

FLY WHEEL

Weight with ring	32 lbs.
No. teeth in ring	118—8-10 pitch
No. teeth in pinion	9
Windshield wiper	Vacuum

CLUTCH

Type	9½ in. single plate
No. of discs	1
Area surface	80.4 sq. in.
Pedal reduction	12.9-1
Facing size	6¼ in. I.D.x9½ in. O.D.x.135 in. thick
Release bearing	1 5/16 in. balls

TRANSMISSION

Type	Sliding gear
Location	Unit with engine
Gear material	Chrome steel
Pitch of Teeth—	
Counter shaft drive gear	7 pitch
Second speed gears	7 pitch
Low and reverse gears	7-9 pitch
Gear Reduction—	
First	3.0-1
Second	1.75-1
High	Direct
Reverse	3.857-1
Counter shaft bearings	2⅞x1¾ in. bronze bush.
Clutch gear bearings—Front	Hyatt No. R.A. 133
Main shaft pilot bearing	Hyatt No. R.A. 135
Main Bearing—	
Front	N.D. No.1208
Rear	N.D. No. 1306
Idler gear bearing	⅞x1⅜ in. bronze bush.

TOTAL REDUCTIONS

Models	All
Gear—1st speed	13.636-1
Reduction—2d speed	7.955
Engine to high speed	4.545-1
Wheels reverse	17.531
Speedometer driving gear	5
Speedometer driven gear	16
Error in speedometer reading	2.5% fast
Lubricant required to fill, 2¼ lbs.	A 150 in summer A 9 in winter

REAR AXLES

Type	Semi-floating
Housing material	Pressed steel
Drive-final	Spiral bevel
Axle shafts	1⅛ in. diam. 10 splines
Axle shaft material	Manganese steel
Differential case	Malleable iron
Differential pinions	Two
Wheel bearings	Hyatt 307
Pinion Shaft Bearing—	
Front	N.D. 5306
Rear	N.D. 1307
Differential bearings	N.D. 0208
Lubricant required to fill, 3½ lbs.	A 150 in summer A 9 in winter
Type drive	Hotchkiss
Reduction	4.545-1
Teeth in ring gear and pinion	50-11

UNIVERSAL JOINTS

Diam. joints	3⅞ in.
Diam. of pins	19/32 in.
Lubrication	4591-M—Summer 4507-M—Winter

FRONT AXLE

Type	Reverse Elliott
Section	I-beam
Size of section,	2⅛x7/32 in. x 1⅞ in. min.
Material	Hot rolled 1035 steel
Tie rod location	Rear
Spindle Diameter—	
Large	1⅜ in.
Small	¾ in.
King bolt diameter	.862 in.
Knuckle bearings	Bronze plain
Vertical thrust bearing,	17 balls ¼ in. diam.
Wheel Bearings—	
Inner	N.D. 909024
Outer	N.D. 909023

BRAKES (SERVICE)

Type	Duo-Servo internal mech.
Location	Front and rear wheels
Drums inside diam.	12 in.
Facing sizes	1¾ x13 in. (8 pcs.)
Brake area	182 sq. in.

BRAKES (HAND)

Type	Lever operated
Location	Service brakes

STEERING GEAR

Make	Saginaw Products
Type	Worm and sector
Wheel diam.	17 in. hard rubber

FRONT SPRINGS

Type	Semi-elliptic
How slung	Over
Length	35 in.
Width	2 in.
Spring Shackle Bolts—	
Front	⅞ in.
Rear	Tryon shackles
Spring clips diam.	½ in.
Eye bushing material	Bronze
Eye bolt lubrication	Zerk

REAR SPRINGS

Length	54½ ins.
Width	2 in.
Spring Shackle Bolts—	
Front	⅝ in.
Rear	Tryon shackles
Spring clips diam.	½ in.
Eye bushing material	Bronze
Eye bolt lubrication	Zerk
Type	Semi-elliptic
How slung	Under

(Continued on page 14)

It flashes instantly . . .

A real prospect file must do more than furnish you with a list of names. It must tell you at a glance if the prospect has been contacted . . . the next follow-up date . . . if booklets were mailed or personally presented . . . when a demonstration is to be made . . . the appearance of the prospect's old car . . . if he has visited the salesroom . . . if he has met the sales manager. It must flash instantly all available information regarding each prospect and at the same time give you group information upon which to base your sales policies.

That's a tall order . . . but a Kardex Prospect File fills it in every particular. Each one works tirelessly and constantly for you seven days a week, week in and week out. And Kardex Prospect Controls have proved their real value to progressive dealers all over the country. They've proved their ability to increase sales . . . to boost profits.

If you're looking for a way to build up your business . . . you'll want to have all the facts about the Kardex Visible Prospect Control Record . . . about the way it flashes you all the information you need and want on every one of your prospects. Mail the coupon today. You don't obligate yourself in any way.

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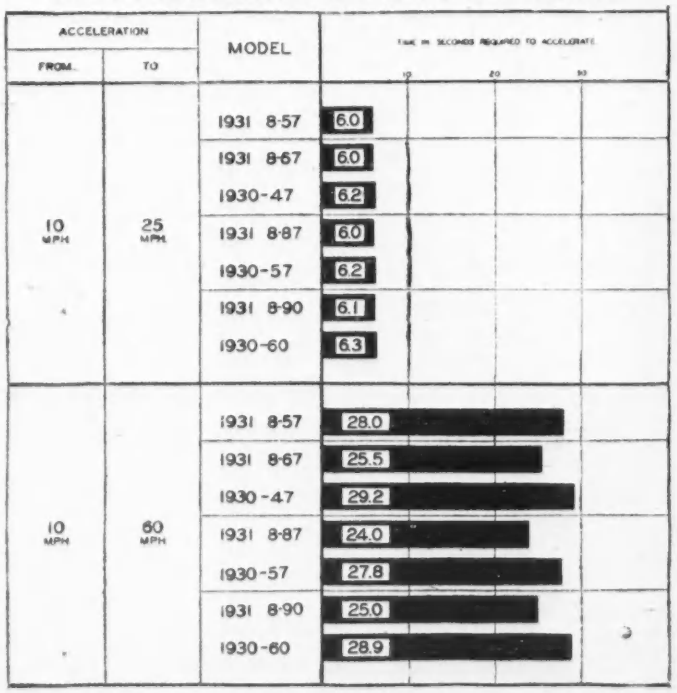
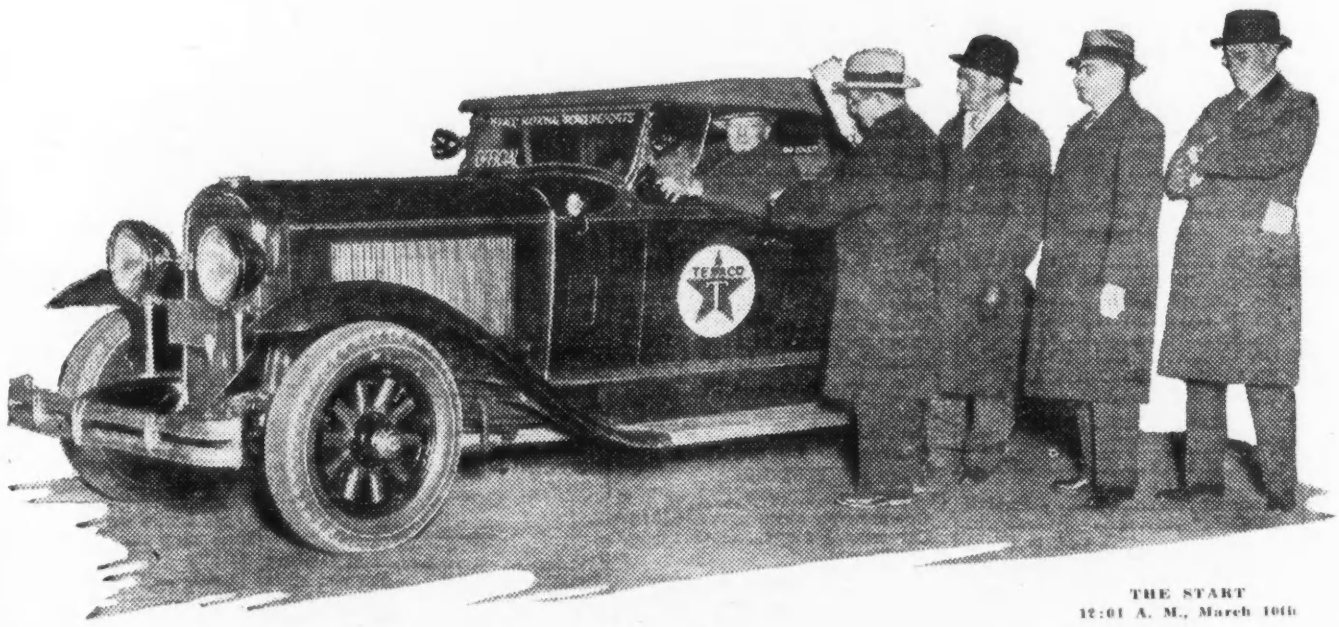
Acceleration of 1931 Buick



THE ABOVE tests were made using four-door sedans, completely equipped and carrying a total load of 450 pounds

›› TEXACO makes a business trip with BUICK from Coast to Coast and return in 16 days



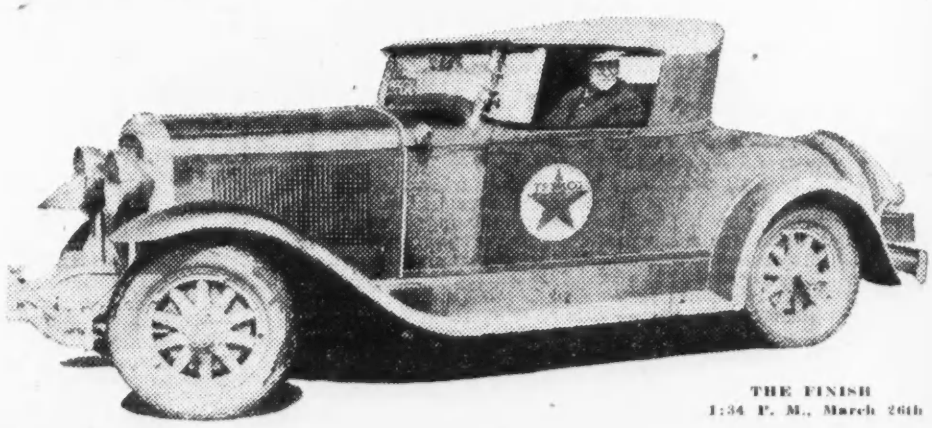
THE START
12:01 A. M., March 10th

AT 12:01 A. M., March 10th, Cecil Hawley, Director of Texaco National Road Reports, left New York for Los Angeles in a 1930 Buick Model 44 Roadster. He was back in New York at 1:34 P. M., March 26th, after traveling 10,243 miles in a total elapsed time of 16 days, 13 hours and 36 minutes!

The object of this trip was to demonstrate to the motoring public the ease, speed and safety with which a winter business trip could be made. Every precaution was taken to observe all traffic rules and regulations. An average speed of 29.35 miles per hour was maintained. Perfect results were secured from Texaco products and the 1930 Buick Model 44 Roadster, which was never allowed to cool off despite the fact that temperatures encountered ranged from zero in Wisconsin to 110 degrees in Imperial Valley, Cal.

This was indeed a thorough test of the new Texaco Motor Oil, which again demonstrated its longer-lasting, crack-proof superiority. Again made strikingly evident was the importance and value to the motoring public of the nation-wide distribution and uniform high quality of Texaco Products. From Coast to Coast and return—with Texaco Motor Oil and Gasoline available all the way!

THE TEXAS COMPANY, 135 East 42d Street, New York City



THE FINISH
1:34 P. M., March 26th

The new Texaco Motor Oil, the *new* and *better* Texaco Gasoline, Texaco-Ethyl, the "dry" Ethyl Gasoline, Texaco Thuban Compound, Texaco Chassis Lubricant, Texaco Cup Grease and Texaco Flushing Oil provide a complete line for better performance.

›››› TEXACO

New Buicks Offered on 114 to 132-In. Wheelbase

(Continued from page 12)

Center gear to face of wheel 43⅛ in.
Steering tube diam..... .840 in.
Steering jacket diam.....1½ in.
Thrust bearing. Taper roller Timken
Gear ratio.....16 to 1

ELECTRICAL SYSTEM

Starter, generator .....Delco-Remy
Distributor, ignition....Delco-Remy
Starter reduction.....13.11 to 1
No. teeth in pinion.....9
Voltage of system.....6
Generator charging rate—cold, 18-21 amps.
Generator speed to crankshaft, 1½ to 1
Distributor point opening, .018 in.— .024 in.
Spark plug gap.... .025 in.— .030 in.
Head lamps .....Tilt Ray
Double filament bulb.....21-21 C.P.
Tail, tonneau and side.....3 C.P.
Instrument Lamp—
Indirect .....3 C.P.
Direct .....3 C.P.
Dome lamp .....6 C.P.
Stop lamp .....15 C.P.
Battery—
Exide .....3 VXA 13-1
Delco .....13 D.W.
Capacity .....85 amp.-hrs.
No. plates 13

SERIES 8-60

ENGINE

Type.....Valve in head
Number of cylinders.....Eight
Bore and stroke.....3 1/16x4⅝ in.
Displacement.....272.6 cu. in.
Actual H. P.....90 at 3,000 r.p.m.
S. A. E. rated H. P.....30.02
Torque.....200 ft. lbs. at 1,600 r.p.m.
Compression.....94 lbs.
Compression ratio.....4.63-1
Firing order.....1-6-2-5-8-3-7-4
Gas tank capacity.....19 gals.

CRANK SHAFT

Material.....Carbon steel
Weight.....117 lbs. with counter weight and balancer
Bearings, Diameter and Length—
Front .....2 5/16x1 31/32 in.
Front center.....2⅜x1¼
Center .....2 7/16x1 1/16 in.
Rear center.....2½x1¼
Rear 2 9/16x2 21/32
Number of Bearing Studs—
Front .....Two ½ in. diam.
Front center.....Two ½ in. diam.
Center .....Two ½ in. diam.
Rear center.....Two ½ in. diam.
Rear .....Four ½ in. diam.

CAM SHAFT

Material .....Carbon steel
Bearings, Diameter and Length—
No. 1, front.....2 3/32x1 7/32 in.
No. 2.....2 7/32x 3/32 in.
No. 3.....2 3/32x ⅝ in.
No. 4.....2 3/32x ⅝ in.
No. 5.....2 1/32x ⅜ in.
No. 6, rear.....1 13/16x1 7/16 in.

CONNECTING RODS

Material.....Carbon steel
Length, C. to C.....9¾ in.
Lower End Bearings—
Material .....Babbitt
Diameter .....2 3/16 in.
Length .....1 5/16 in.
Cap bolts.....Two 7/16 in. diam.
Wrist pin diameter.....1 3/8 in.

VALVES

Type of mechanism.....roller
Material—
Inlet.....Chrome nickel steel
Exhaust.....Silchrome No. 1
Clear Diameter—
Inlet .....1 13/32 in.
Exhaust .....1 13/32 in.
Lift .....340 in.
Stem diameter.....Inlet .3715 in.
Exhaust .3695 in.
Spring Pressure—
Valve open.....129-143 lbs.
Valve closed..... 38-49 lbs.
Valve lash..... .008 in.
Timing—
Inlet opens.....1½ deg. B.U.D.C.
Inlet closes.....56½ deg. A.L.D.C.
Exhaust opens...54½ deg. B.L.D.C.
Exhaust closes...30½ deg. A.U.D.C.

TIMING GEARS

Material—
Cam shaft.....Textolite
Crank shaft and generator..Steel

PISTONS

Material.....Cast iron
Compression rings.....Two ⅛ in.*
Oil control rings.....One 3/16 in.*
*Above pin.

LUBRICATING SYSTEM

Type..Pressure to main, connecting rods, cam shaft bearings and rocker arm shaft.
Pump type.....Gear
Oil pressure.....35 lbs.
Capacity, dry engine.....11½ qts.
Capacity, refill.....8 qts.
Oil filter.....A. C.
Oil temp. regulator....Water cooled

COOLING SYSTEM

Type..Thermostatic shutter control
Pump type.....Centrifugal
Pump drive.....Generator shaft
Radiator type....Cellular ¼ in. Hex.
Core area.....466.34 sq. in.
Core thickness.....2¼ in.
Capacity system.....3¾ gals.
Fan, diameter.....18½ in.
Number of blades.....4
Fan drive.....⅜ in. V belt
Fan bearing and water pump bearings .....Plain
Fan lubrication...Oil-self contained pressure feed

CARBURETOR

Make .....Marvel
Type .....Duplex
Model TD-2-S
Throttle diameter.....1 1/16 in.
Heat control.....Semi-automatic
Inlet manifold diameter.....1 1/16 in.
Fuel feed.....A. C. fuel pump
Air cleaner and silencer.....A.C.
Riser .....1¼ in.

MISCELLANEOUS

Crank Case, Upper—
Material..Cast integral with block
Cylinder hd. bolts.20 bolts 7/16 in. di.
2 studs 7/16 in. diam.
Crank Case, Upper—
Flywheel weight with ring..58 lbs.
Number teeth in ring.....123
Number teeth in pinion.....9
Windshield wiper.....Vacuum

CLUTCH

Type.....10 in. single plate, dry
No. discs.....1
Area surface.....91.82 sq. in.
Pedal reduction.....12.1-1
Facing size.....6¼ in. I.D. 9⅞ in. O. D.x135 in.
Release bearing.....12 ⅜ in. balls

TRANSMISSION

Type.....Synchronizing sliding gear
Location.....Unit with engine
Gear material..Chrome nickel steel
Pitch of Teeth—
Counter shaft drive gear.9.113 pitch
Second speed gears....7-132 pitch
Low and reverse gears....7-9 pitch
Gear reduction, first.....3.030
Gear reduction, second.....1.745
Gear reduction, high.....Direct
Gear reduction, reverse.....3.636
Counter shaft bearings
Two 1 in. diam. x 2 in. bronze bush.
Clutch gear bearing, front
N. D. 7203 Special
Main shaft pilot bearing
⅛ in. diam. x 2 1/16 in. bronze bush.
Main bearing, front.....N. D. 1209
Main bearing, rear.....N. D. 1206
Idle gear bearing
⅞ in. diam. x 1½ in. bronze bush

TOTAL REDUCTION

Models	8-66, 8-66S, 8-67	8-64, 8-65
Gear, 1st speed	13.495	12.671
Reduction, 2d speed	7.772	7.297
Engine to high speed	4.454	4.182
Wheel reverse	16.195	15.205
Speedometer—		
Driving gear	8	8
Driven gear	24	22

Lubricant required to fill.....5 lbs.
A-150 in summer
A-9 in winter

REAR AXLE

Type.....¾ floating
Housing material.....Pressed steel
Drive, final.....Spiral bevel
Axle shafts..1 7/16 in. diam. 10 splines
Axle shaft material.Manganese steel
Differential case.....One piece
Differential pinions.....2
Wheel bearings.....Hyatt B. W. 210
Pinion shaft bearing front. N.D. 5100
Pinion shaft bearing rear.N.D. 1309
Differential bearings.....N.D. 0210
Lubricant required to fill
7½ lbs. A-150 in summer
A-9 in winter
Type drive.....Torque tube
Driving ball diameter.....4¾ in.

Models	8-66, 8-66S, 8-67	8-64, 8-65
Teeth in ring gear and pinion	49-11	46-11
Reduction	4.454	4.182

UNIVERSAL JOINT

Diameter, O. D.....3 1/32 in.
Diameter of pins.....7/16 in.
Ring bolts.....Four ⅜ in. diam.
Lubrication..Automatic, from trans.

FRONT AXLE

Type.....Reverse Elliot
Section .....I-Beam
Size of section
2¼ in. x 1⅞ in. x 3/32 in. (min. Dim.)
Material.....Carbon steel
Tie rod location.....Rear
Spindle diameter, large.....1 1/16 in.
Spindle diameter, small.....¾ in.
King bolt diameter.....⅞ in.
Knuckle bearings.....Plain bronze
Vertical thrust bearing, "Nice" 17¼ in. balls
Wheel Bearings—
Inner .....N.D. 909024
Outer .....N.D. 909023

FRONT SPRINGS

Type .....Semi-elliptic
How slung .....Over
Length .....36¾ in.
Width .....2 in
Spring Shackle Bolts—
Front .....⅞ in
Rear .....⅞ in.
Spring clips diam. .....⅞ in.
Eye bushing material.....Bronze
Eye bolt lubrication...Grease—Zerk

REAR SPRINGS

Type .....Semi-elliptic
How slung .....Under
Length .....55¼ in.
Width .....2¼ in.
Spring Shackle Bolts—
Front .....⅝ in.
Rear .....⅝ in.
Spring clips diam. .....⅞ in.
Eye bushing material.....Bronze
Eye bolt lubrication...Grease—Zerk

BRAKES (SERVICE)

Type.....Controlled Servo internal mechanical
Location.....Front and rear wheels
Drums.....14 in. inside diam.
Facing Sizes—
Four 7-43/64 in.x1¾ in. x 1/8 in.
Four 14-21/64 in.x1¾ in. x 1/8 in.
Brake area .....154 sq. in.
Equalizer .....None

BRAKES (HAND)

Type.....Same as service brake
Location..... " " " "
Drum ins. dia. " " " "
Facing sizes.. " " " "
Braking area. " " " "

STEERING GEAR

Make.....Saginaw Products
Type.....Worm and roller
Wheel diam. ....17½ in. hard rubber
Center gear to face of wheel 45⅜ in.
Steering tube diam.....1.050 in.
Steering jacket diam.....1⅝ in.
Thrust bearing, Taper roller—Timken
Lower bearing, Taper roller—Timken
Ratio .....17 to 1
Center distance between worm and roller.....2 1/16 in.
Diam. of roller shaft.....1⅜ in.

ELECTRICAL SYSTEM

Starter, generator.....Delco-Remy
Distributor, ignition....Delco-Remy
Starter reduction.....13-2/3 to 1
No. of teeth in pinion.....9
Voltage of system.....6
Generator charging rate—cold, 18-21 amps.
Generator speed to crankshaft, 1½ to 1
Distributor point opening, .018 in. to .024 in.
Spark plug gap... .025 in. to .030 in.
Head lamps.....Guide—Tilt Ray
Double filament bulb..21 & 21 C.P.
Tail, tonneau and side.....3 C.P.
Instrument Lamp—
Indirect .....3 C.P.
Direct .....3 C.P.
Dome Lamp .....6 C.P.
Stop lamp .....15 C.P.
Battery—
Exide .....3—MXV—13-1
Delco .....13 EW
Capacity .....100 amp. hrs.
No. of plates.....13 (high)

DETAILED SPECIFICATIONS: SERIES 8-80—[illegible]

ENGINE—SERIES 8-80 AND 8-90

Type .....Valve in head
Number of cylinders.....Eight
Bore and stroke.....3 5/16x5 in.
Displacement .....344.8 cu. in.
Actual H. P.....104 at 2,800 r.p.m.
S. A. E. rated H. P.....35.12
Torque....250 ft. lbs. at 1,400 r.p.m.
Compression....88.5 lbs. per sq. in.
Compression ratio 4.5-1
Firing order 1-6-2-5-8-3-7-4
Gas tank capacity.....22 gals.

CRANK SHAFT

Material .....Carbon steel
Weight.....143.5 lbs. heavy cheeks, with counter weights and balancer
Bearings, Diameter and Length—
Front .....2 5/8x1 3/8 in.
Front center .....2 5/8x1 3/8 in.
Center .....2 1/8x1 1/8 in.
Rear center.....2¾ x1 3/8 in.
Rear .....2 1/8x2 5/32 in.
Number of Bearing Studs—
Front .....Two ½ in. diam.
Front center ....Two ½ in. diam.
Center .....Two ½ in. diam.
Rear center ....Two ½ in. diam.
Rear .....Four ½ in. diam.

CAM SHAFT

Material .....Carbon steel
Bearings, Diameter and Length—
No. 1.....Front 2 3/32x1 7/16 in.
No. 2.....2 7/32x 3/32 in.
No. 3.....2 3/32x 3/32 in.
No. 4.....2 3/32x 3/32 in.
No. 5.....2 1/32x 3/32 in.
No. 6.....Rear 1 13/16x1 7/16 in.

CONNECTING RODS

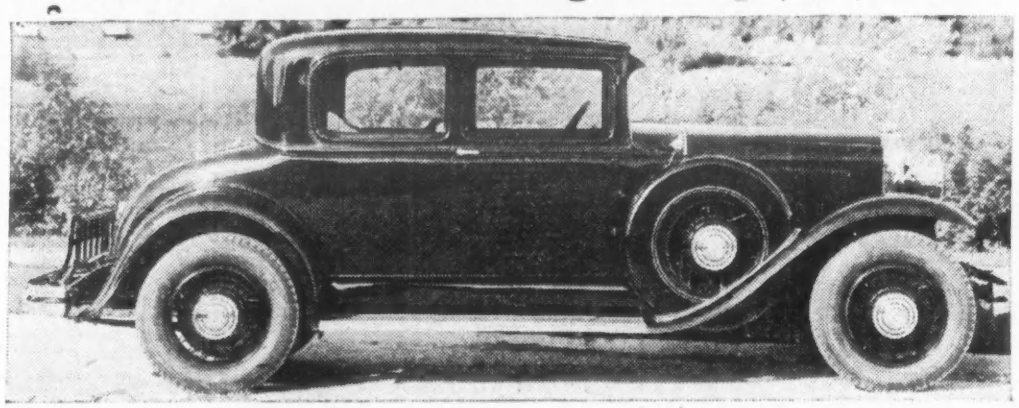
Material .....Carbon steel
Length C. to C.....11 in.
Lower End Bearings—
Material .....Babbit
Diameter .....2 3/8 in.
Length .....1 7/8 in.
Cap bolt.....Two 7/16 in. diam.
Wrist pin diam. .....⅞ in.

VALVES

Type of mechanism .....Roller
Material—
Inlet .....Chrome nickle steel
Exhaust .....Silchrome No. 1
Clear Diameter—
Inlet .....1 5/8 in.
Exhaust .....1 7/16 in.
Lift .....340 in.
Stem diam.....Inlet .3715 in.
Exhaust .3695 in.
Spring Pressure—
Valve open.....129 lbs. to 143 lbs.
Valve closed .....38 lbs. to 49 lbs.
Valve lash ..... .008 in.

(Continued on Page 17)

Buick 8-96 Five Passenger Coupe, $1,765



NO DRAFTS—NO DUST

PERFECT VENTILATION

Frequently motorists sacrifice ventilation for immediate comfort in storms and cold weather. Windows are closed with resultant headaches—danger from poor vision, not hearing or giving signals.

The position of Dole Draft Deflectors in the door openings causes them to act on the same principle as the louvre openings in the hood. The vacuum behind the deflectors, created by the forward motion of the car, sucks the stale air from the interior and at the same time allows fresh air to enter without disagreeable drafts and unpleasant cross currents.

Dole Draft Deflectors add a touch of smartness and refinement. Leading manufacturers have already voiced their approval. The deflectors have the appearance of a permanent built-in part of the car, yet can be installed in five minutes without drilling or marring body finish. They remain in position and are rattle proof. All metal parts chromium plated. Shatter proof safety glass is standard. Good plate glass on request.

Dealers—Put Them on Floor Models

Nine out of ten will be sold with the car—at a handsome profit to you—if necessary, they can be removed without marring car.

THE DOLE VALVE COMPANY

1923 Carroll Ave., Chicago, Illinois

Also manufacturers of Dole Double Compression Couplings, Dole Ball-Roll Couplings, Dole Thermostats, Dole Primers

Dole

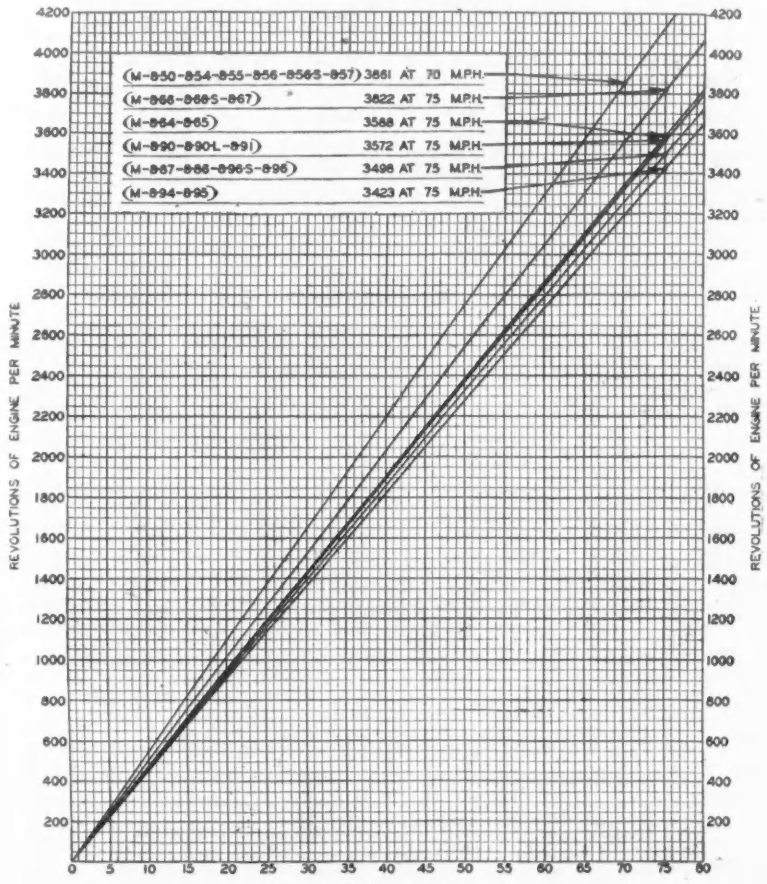
DRAFT DEFLECTORS

Marmon welcomes the new Eights to a field which Marmon chose four years ago

MARMON'S
STRAIGHT-EIGHT RECORD
FIRST to concentrate exclusively on straight-eights.
FIRST eight at price of six.
FIRST eight under $1000.
FIRST complete line of eights.
FIRST to make straight-eight practical (originator of Down-Draft Manifolding which solved problem of starved end cylinders).
FULL YEAR GUARANTEE instead of usual ninety days.
LOWEST PRICED EIGHT IN THE WORLD—New Marmon-Roosevelt, $950 (factory).
ONLY COMPLETE LINE OF EIGHTS—from $950 to $3000-$5000 field.
Marmon Motor Car Company
Indianapolis

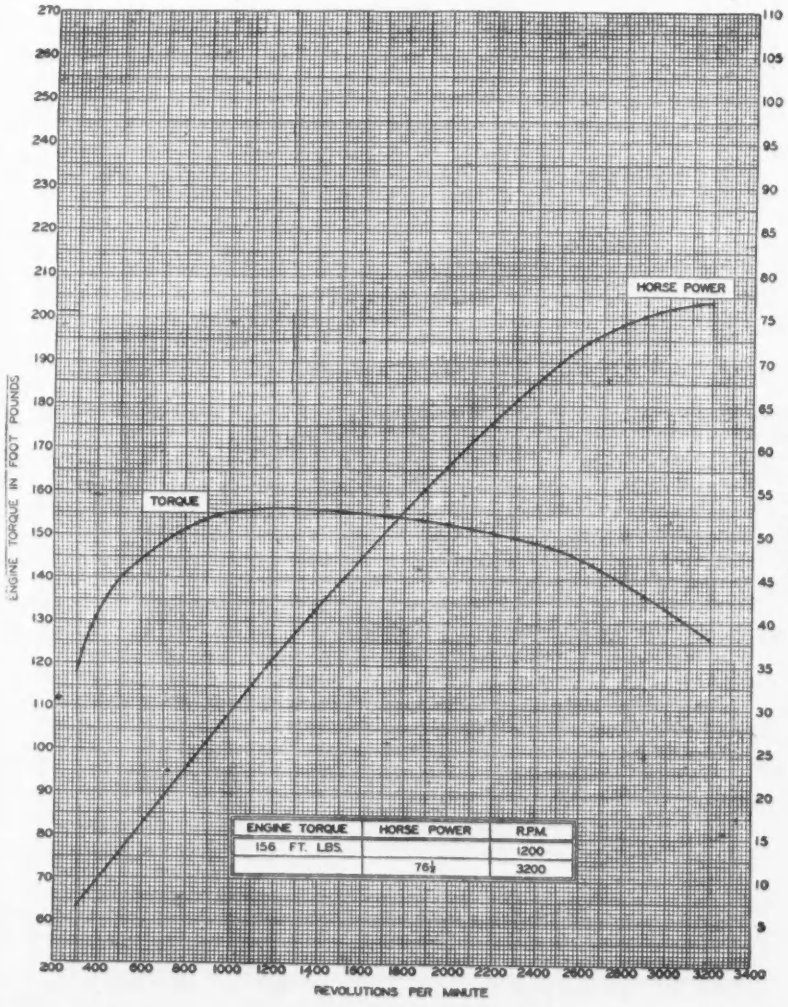
Engine Characteristics of New 1931 Buick Line

CHART SHOWING RELATION BETWEEN
ENGINE AND CAR SPEEDS
FOR
1931 BUICK CARS



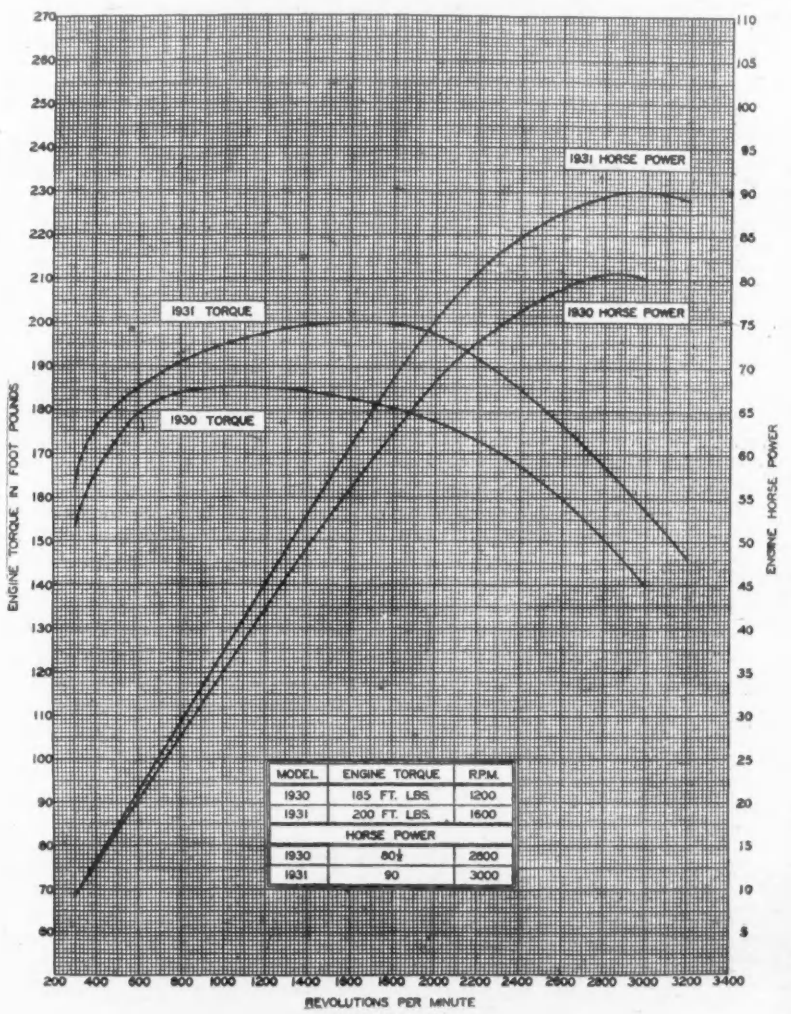
	SERIES 850						SERIES 860					SERIES 880		SERIES 890				
MODEL	8-50	854	8-55	8-56	856S	8-57	8-64	8-65	8-66	866S	8-67	8-86	8-87	8-90	890L	8-91	8-94	8-95	898S	8-96
AXLE RATIO	4.58-1						4.18-1		4.45-1			4.27-1		4.36-1		4.18-1		4.27-1		
TIRE SIZE	18X5.25						19X5.50					19X6.50		19X6.50						
REVOLUTIONS PER MILE	728						686.4					654.9		654.9						
WHEELBASE	114						118					124		132						

ENGINE HORSE POWER AND TORQUE
ON
1931 SERIES 8-50 BUICK ENGINES



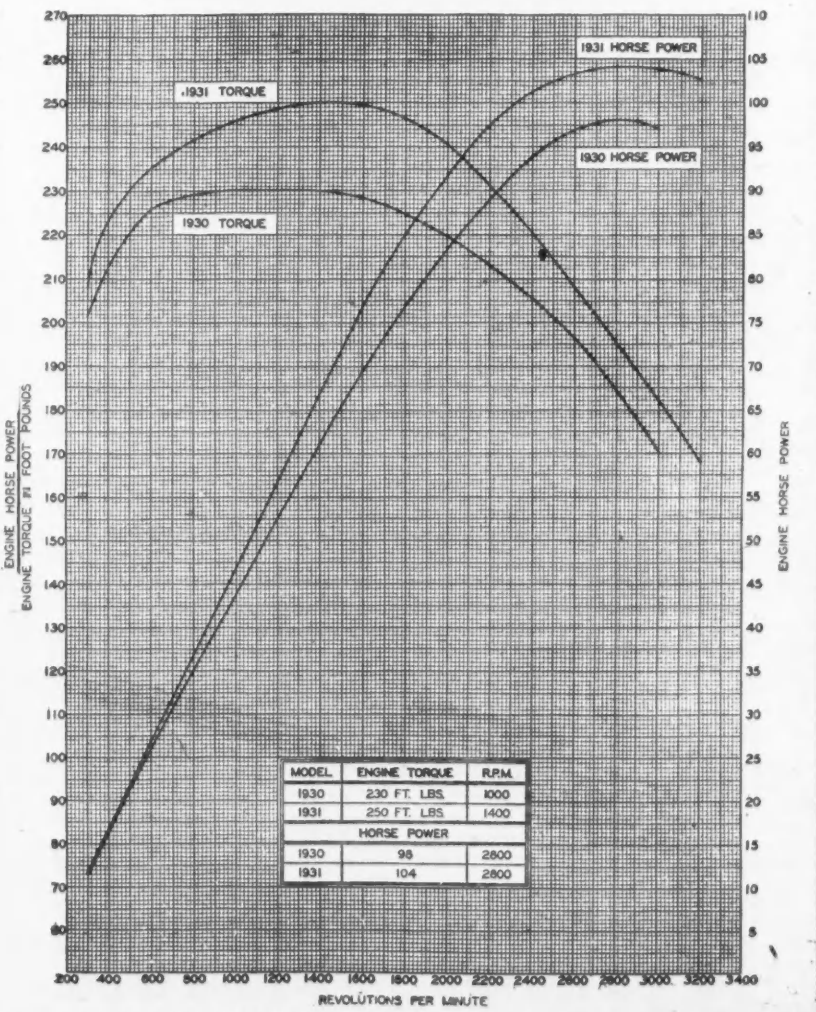
ENGINE TORQUE	HORSE POWER	R.P.M.
156 FT. LBS.		1200
	76½	3200

COMPARISON OF
ENGINE HORSE POWER AND TORQUE
BETWEEN
1930 SERIES 40 vs 1931 SERIES 8-60 BUICK ENGINES



MODEL	ENGINE TORQUE	R.P.M.
1930	185 FT. LBS.	1200
1931	200 FT. LBS.	1600
	HORSE POWER	
1930	80½	2800
1931	90	3000

COMPARISON OF
ENGINE HORSE POWER AND TORQUE
BETWEEN
1930 SERIES 50-60 vs 1931 SERIES 8-80 & 8-90 BUICK ENGINES



MODEL	ENGINE TORQUE	R.P.M.
1930	230 FT. LBS.	1000
1931	250 FT. LBS.	1400
	HORSE POWER	
1930	95	2800
1931	104	2800

Noiseless Gear Shift Offered on New Buick Eights

(Continued from Page 14)

Timing—
Inlet opens.....1½ deg. B.U.D.C.
Inlet closes ....56½ deg. A.L.D.C.
Exhaust opens..54½ deg. B.L.D.C.
Exhaust closes..30½ deg. A.U.D.C.

TIMING GEARS

Material—
Cam shaft .....Textolite

PISTONS

Material .....Cast iron
Compression rings....Two ⅛ in. above pin.
Oil control rings....One 3/16 in. above pin.

LUBRICATION SYSTEM

Type..Pressure to main, conn. rods, cam shaft bearings and rocker arm shaft
Pump type .....Gear
Oil pressure .....35 lbs.
Capacity—Dry engine.....12½ qts.
Capacity—Refill .....9 qts.
Oil filter .....A. C.

COOLING SYSTEM

Type..Thermostatic shutter control
Pump type .....Centrifugal
Pump drive .....Generator shaft
Radiator type..Cellular, ¼ in. hex.
Core area .....466.34 sq. in.
Core thickness .....2¾ in.
Capacity .....4¾ gallons
Fan diam.....18½ in.
No. of blades 4
Fan drive .....⅝ in. V belt
Fan bearing and water pump bearings .....Plain

CARBURETOR

Make .....Marvel
Type .....Duplex
Model .....T.D.—3
Throttle diam. .....1 7/8 in.
Heat control .....Semi-automatic
Inlet manifold diam.....1⅜ in.
Fuel feed.....A.C. fuel pump
Air cleaner and silencer.....A.C.

MISCELLANEOUS

Crank Case—Upper—
Material..Cast integral with block
Cylinder head bolts..20 bolts and 2 studs

Flywheel—
Weight with ring.....58½ lbs.
No. of teeth in ring.....123
No. of teeth in pinion.....9

CLUTCH

Type .....Two plate—dry
No. of discs 2
Area surface .....121.736 sq. in.
Pedal reduction .....12.1—1
Facing size.....6½ I.D.x9 O.D.x .135 in. thick
Release bearing.....12 3/8 in. balls

TRANSMISSION

Type....Synchronizing sliding gear
Location.....Unit with engine
Gear material..Chrome nickel steel
Pitch of Teeth—
Counter shaft driver gear, 9.113 pitch
Second speed gears....7.132 pitch
Low and reverse gears..7-9 pitch
Gear reduction—first.....3.149-1
Gear reduction—second....1.760-1
Gear reduction.—high.....Direct
Gear reduction—reverse...3.989-1
Counter shaft bearings..2—1x2⅝ in. bronze bush.
Clutch gear bearing—front, N.D. 7203 special
Main shaft pilot bearing, 1 1/4x2 3/16 in. bronze bush.
Main bearing—front....N.D. 1209
Main bearing—rear.....N.D. 1207
Idler gear bearing.....⅞x1 1/16 in. bronze bush.

TOTAL REDUCTIONS

Models.....	8-86, 8-87, 8-96, 8-96S	8-94, 8-95	8-90, 8-90L, 8-91
Gear—			
1st speed..	13.456	13.169	13.742
Reduction—			
2d speed....	7.52	7.36	7.68
Engine to			
high speed	4.273	4.182	4.364
Wheels			
reverse	17.045	16.68	17.408

REAR AXLE

Type .....¾ floating
Housing .....Pressed steel
Drive—final .....Spiral bevel
Axle shafts..1 1/16 in diam., 10 splines
Axle shaft material, Manganese steel
Differential case.....One piece
Differential pinions 2
Wheel bearings....Hyatt S.W. 211
Pinion shaft bearing front, N.D. 5307
Pinion shaft bearing rear..N.D. 1310
Differential bearings .....N.D. 0101
Type drive .....Torque tube
Driving ball diam.....5½ in.

Models.....	8-86, 8-87, 8-96, 8-96S	8-94, 8-95	8-90, 8-90L, 8-91
Teeth in ring gear and pinion. ..	47-11	46-11	48-11
Reduction..	4.273	2.182	4.364

UNIVERSAL JOINTS

Diameter .....4 3/16 in.
Diameter of pins.....1 1/8 in.
Ring bolts.....Four ⅜ in. diam.

FRONT AXLE

Type .....Reverse Elliott
Section .....I-Beam
Size of section.....2 3/16x2 1/16x¼ in. (min. diam.)
Material .....Carbon steel
Tie rod location.....Rear
Spindle diam. large.....1½ in.
Spindle diam. small.....1 1/8 in.
King bolt diam.....1 in.
Knuckle bearings ....Plain bronze
Vertical thrust bearing..."Nice" 4988 14 7/8 in. balls
Wheel bearings, inner..N.D. 909,028
Wheel bearings, outer...N.D. 909,027

FRONT SPRINGS

Type .....Semi-elliptic
How slung .....Over
Length .....37⅞ in.
Width .....2 in.

REAR SPRINGS

Type .....Semi-elliptic
How slung .....Under
Length .....58⅞ in.
Width .....2¼ in.

BRAKES (SERVICE)

Type.....Controlled servo internal mechanical
Location .....Front and rear
Drums inside diam.....15 in.
Facing sizes.....Four 15 1/4x2x2 3/16 in
Four 8 1/2x2x2 3/16 in.
Brake area .....187.6 sq. in.

BRAKES (HAND)

Type .....Same as service brakes

STEERING GEAR

Make.....Saginaw products
Type.....Worm and roller
Wheel diameter...18 in. hard rubber
Center gear to face of wheel.46 7/16 in.
Steering tube diameter.....1.050 in.
Steering jacket diameter.....1 5/16 in.
Thrust bearing.Taper roller, Timken
Lower bearing.Taper roller, Timken
Ratio 20-1
Center distance between roller and worm .....2 1/16 in.
Diameter of roller shaft.....1⅝ in.

ELECTRICAL SYSTEM

Starter, generator.....Delco Remy
Distributor, ignition....Delco Remy
Starter reduction.....13 2-3-1
Generator speed to crank shaft.1½-1
Distrib. point opening .018 in.-.024 in.
Spark plug gap... .025 in. to .030 in.
Head lamps.....Guide, tilt ray
Double filament bulb.....21-21 C.P.
Battery, exide.....3 MXV. 15-1
Battery, Delco.....15 C.W.
Capacity .....120 amp. hrs.
Number of plates.....15 high

Cleveland Pneumatic Official Predicts Normalcy by 1931

(Continued from Page 3)

of the auto manufacturers are beginning production of new models.

"Manufacturers have not been caught with the large inventories they had during the previous depressions, and it is for that reason that the orders referred to provide cause for optimism, and the belief that more activity in industry generally is just around the corner.

"It is reasonable to believe, on the basis of current activity, and the outlook, based on present trends, that by September or October substantial improvement will be noticeable.

Every automotive engineer knows that the more you increase the compression of a motor, the more it will "knock" on ordinary gasoline. A high compression car *must* have a high compression fuel. Ethyl Gasoline was developed by seven years of research to fill this need.

Here's why Ethyl Gasoline

makes high-compression cars run better

INSTEAD of exploding from the impact of compression, Ethyl Gasoline waits until the spark plug sets it off.

Then, instead of exploding in a sharp burst that *slaps* its force wastefully against cylinder head and piston, Ethyl Gasoline explodes in a smooth, powerful thrust. It sends pistons down with *gathering* force.

Knocking is eliminated and the full power of gasoline is given to motor action.

Ethyl fluid makes the difference.

To the power of good gasoline, Ethyl fluid adds the element of *control.*

But Ethyl Gasoline gives more than Anti-knock.

Before the gasoline that goes into Ethyl is ever mixed with Ethyl fluid it must be *good* gasoline.

Ethyl standards require a base gasoline of high volatility (to give quick starting). They require a gasoline free as possible from gum and sulphur. A gasoline that gives economical mileage.

After these requirements are met, then Ethyl fluid is added to *control* the explosive action.

A good gasoline (such as the Ethyl *base* gasoline) may have some anti-knock qualities, but no straight gasoline has the degree of combustion control that Ethyl Gasoline has, because no other gasoline contains Ethyl fluid.

Ethyl Gasoline is *good* gasoline *plus* Ethyl fluid. Ethyl Gasoline Corporation, Chrysler Building, New York City.

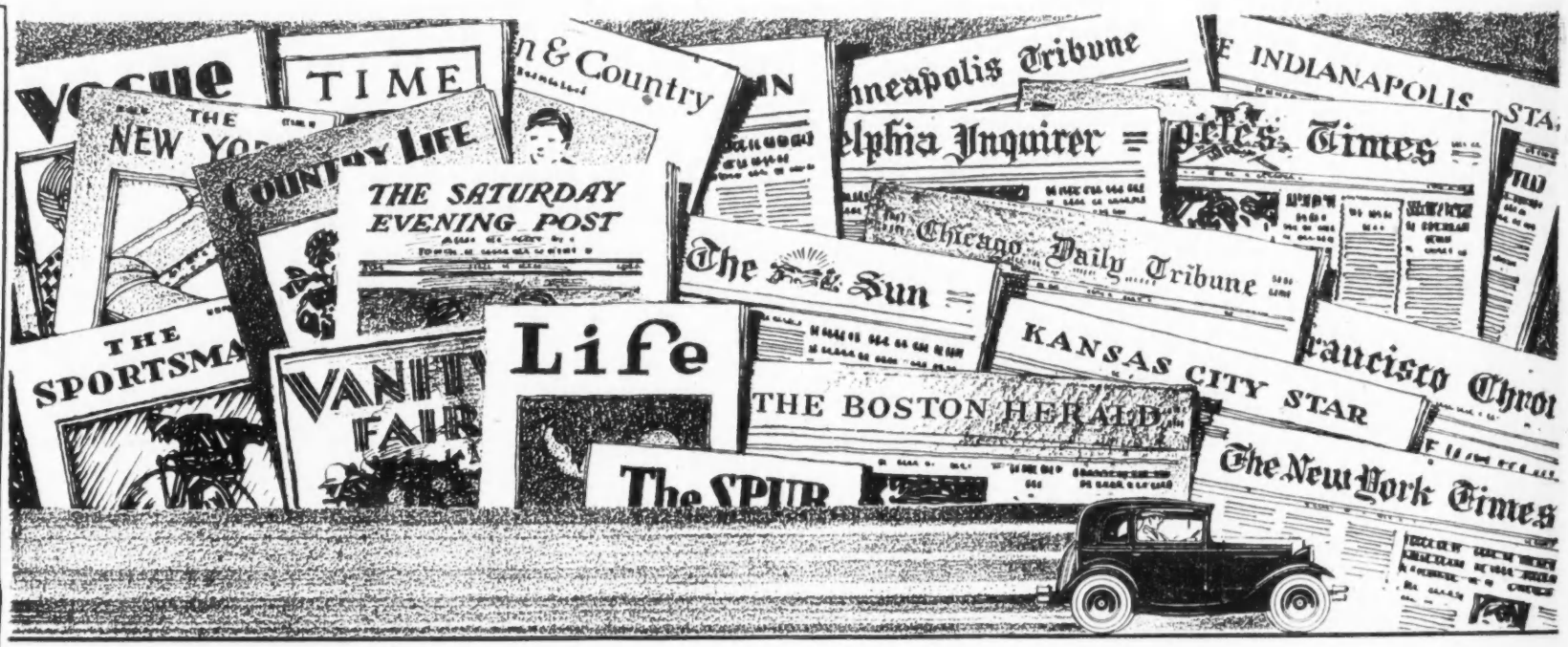
Wherever you drive—whatever the oil company's name or brand associated with it—*any* pump bearing the Ethyl emblem represents quality gasoline of anti-yknock rating sufficiently high to "knock out that 'knock'" in cars of average compression and bring out the additional power of the new high-compression cars.

ETHYL GASOLINE

Makes *any* car run better

AMERICAN AUSTIN

the bantam-car . . . that is



stepping on the gas in the advertising pages

Right from the start, the sporty little Austin spurted into public favor. Before the first smart looking bantams took the road, people had heard of them, read about them, were prepared for them—through advertising . . . and advertising that had a really striking story to tell . . . a story new to American car owners.

Now the American-made Austin is here, an established success, followed by nationwide publicity and nationwide discussion. And there's no let-up . . . instead—a large increase . . . in the advertising that is telling the same striking story to new thousands of magazine and newspaper readers.

Austin advertising is getting seen, and what is more important, getting read . . . as evidenced by the number and character of inquiries it is bringing us.

Here's what the Austin bantam offers the public . . . a smart small car that costs less than ¾c. a mile to run, for gas, oil and tires.

There's more than record-breaking economy to the Austin selling story . . . there's record-breaking "parkability" and ease of handling in general . . . think what a wheelbase of only 75" and a tread of only 40" mean to a driver in heavy traffic.

Distributors and dealers are finding that the Austin bantam is priced right for volume sales . . . $445 at the factory . . . making the bantam a logical choice as a smart extra car to save big car mileage and big car depreciation, and to provide greater individual convenience for members of large families.

CONTRACTS FOR OVER 183,000

CARS HAVE BEEN RECEIVED

AMERICAN AUSTIN CAR COMPANY, INC., BUTLER, PENNSYLVANIA

THE AMERICAN *Austin*

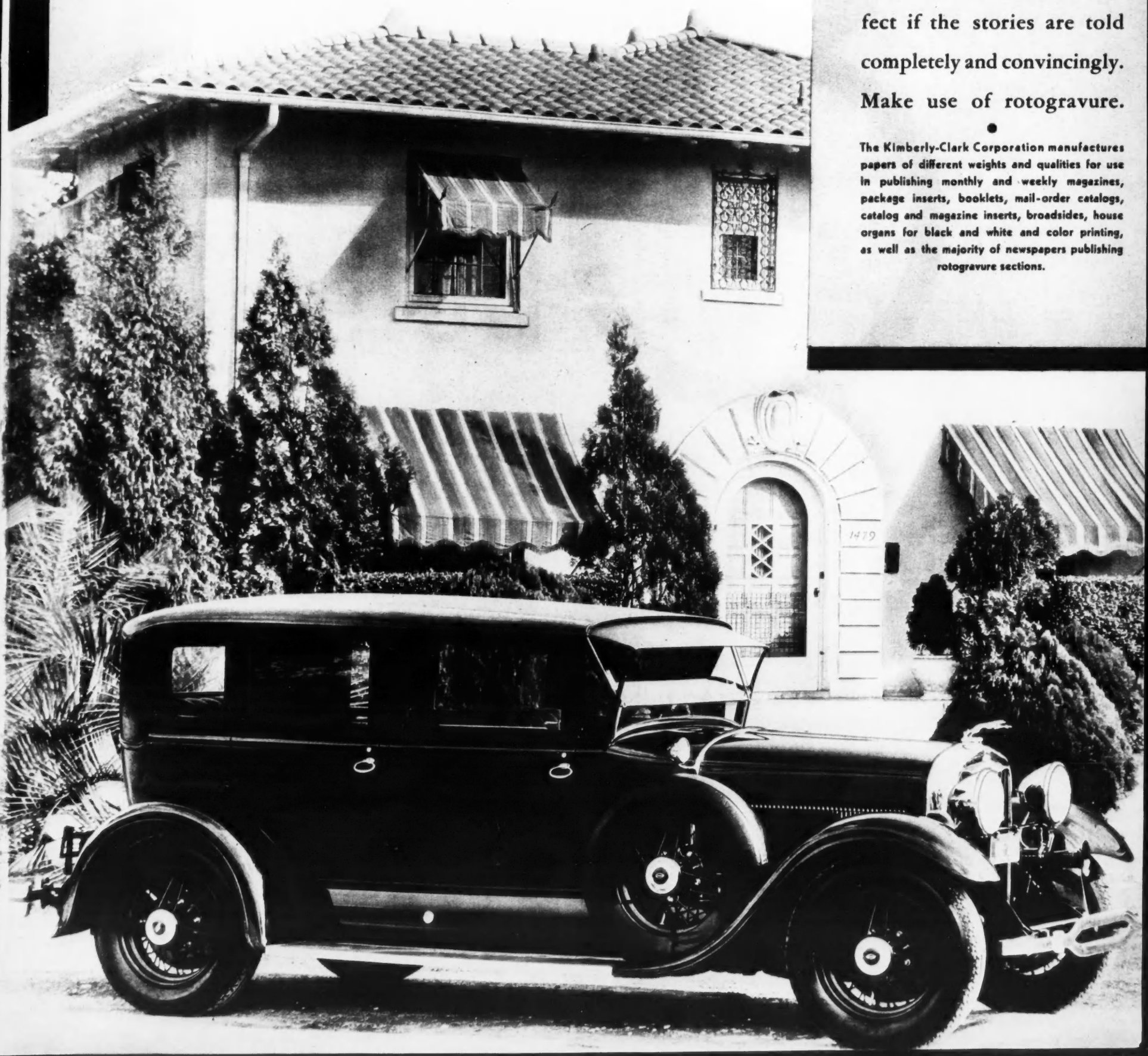
QUALITY

●

Kimberly-Clark Corporation

Established 1872 NEENAH, WIS.

NEW YORK: 122 E. 42nd St. CHICAGO: 8 So. Michigan Ave. LOS ANGELES: 510 W. 6th St



Things as well as people are known by the company they keep. That's why, in a picture of a car, the surroundings have much to do with the feeling of quality. That's why, too, the reproduction of the picture should be by rotogravure, the process that reproduces photographs perfectly. Pictures tell stories. Reproduction must be perfect if the stories are told completely and convincingly. Make use of rotogravure.

●

The Kimberly-Clark Corporation manufactures papers of different weights and qualities for use in publishing monthly and weekly magazines, package inserts, booklets, mail-order catalogs, catalog and magazine inserts, broadsides, house organs for black and white and color printing, as well as the majority of newspapers publishing rotogravure sections.

Now BUICK ANNOUNCES

the 8 as BUICK builds it

A Straight Eight Valve-in-Head
in Four Series and Four Price Ranges

—featuring masterly new Valve-in-Head Straight Eight Engines—new Syncro-Mesh Transmissions—new Insulated Bodies by Fisher—including one line of Straight Eights priced fully $200 lower than the fine Buick Six of last year.

FOUR SERIES		
$1025 TO $1095	STRAIGHT 8	$1535 TO $1565
$1285 TO $1355		$1610 TO $2035
ALL PRICES F.O.B. FACTORY		
ALL VALVE-IN-HEAD		

BUICK MOTOR COMPANY, FLINT, MICHIGAN
Division of General Motors Corporation
CANADIAN FACTORIES: McLAUGHLIN-BUICK, OSHAWA, ONTARIO

A letter or wire will bring the whole great story regarding sales representation for The Eight as Buick Builds It.